



NGSS
***IO5 Quality assurance –
Monitoring the impact of Local
Workshops***
Global Evaluation Report



ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
UNIVERSITY OF CRETE

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Table of contents

Introduction	4
Description of the questionnaire:	4
Questions 1 & 2	4
Question 3	5
Question 4	7
Question 5	8
Question 6	9
Question 7	9
Question 8	10
Question 9	11
Question 10	13
Question 11	14
Question 12	15
Question 13	16
Question 14	17
Question 15	19
Question 16	22
Question 17	24
Question 18	28
Question 19	29
Summarising	30
Appendix I – The evaluation questionnaire	32

Introduction

During the first year of the NGSS project, a series of Local Workshops (LWs) took place in the partner countries. Local Workshops aimed to introduce local teachers to the importance and the methods of the STEAM approach. After their occurrence in the partner countries, each partner distributed an evaluation questionnaire. The partners collaboratively constructed and used a multiplier event evaluation questionnaire to evaluate the quality and overall organisation of the event. Some of these workshops had to be conducted online due to the COVID-19 restrictions that were applied at the time.

Description of the questionnaire:

The questionnaire comprised of 19 questions:

2 multiple-choice questions

10 rating questions

And 7 open-ended questions

The following subjects were covered during the evaluation:

The participants' occupation

Expectations from the multiplier events and the extent to which these expectations were met

The quality of the overall organization

The duration and structure of the event

The quality of the content presented

The suitability of the venue or platform used for the event

The quality of the materials used at the event

The favourite takeaways and difficulties during the event

The usefulness of the training and participants' willingness to recommend it to colleagues

Further advice to the organizers of the event

The project partners collectively agreed on the above questions. The questionnaire was made available both online through Admin Project platform, or Google Forms and in print for areas without internet access.

Results

In the following sections, we will present the results for each question and provide a summary at the end. For each rating question, we will report the top two rates given by respondents, which are "the highest rate" and "the second highest rate".

Questions 1 & 2

Questions 1 and 2 collected data about the number and occupation of those who participated in LW.

Country	Kindergarten/preschool teachers	Primary school teachers	Student-teachers	Progymnasium	Other
Türkiye	19				
Lithuania		15		5	
Romania	7	8			
Bulgaria	2	24			3
Greece	15		41		
Poland		15	4		6
Totals	24	62	45	5	9

The aim of questions 1 and 2 was to gather information about the number of teachers who participated in the Local Workshops (LW) for the NGSS project in different countries. In Turkey, 69 teachers participated in the Local Workshops and 19 responded to the evaluation task, but there is no information about the specific types of teachers who participated. In Lithuania, 15 kindergarten/preschool teachers and 5 primary school teachers participated. In Romania, 7 kindergarten/preschool teachers and 8 primary school teachers participated. In Bulgaria, 2 kindergarten/preschool teachers, 24 primary school teachers, and 3 other teachers participated. In Greece, 15 professional kindergarten teachers and 41 student-kindergarten teachers participated in the Local Workshops. In Poland, the majority of workshop participants were primary school teachers. Only 4 pre-service teachers attended the NGSS workshop. Other participants included Vet trainers and representatives of personal development support for children and pupils with special educational needs. The team of these centers consists of specialist teachers, special educators, psychologists, speech and language therapists and other specialists. The role of such specialists is to support pupils with special educational needs in their development, in addition to the efforts of their teachers at school. Overall, a total of 164 participants responded to the evaluation of the Local Workshops.

Question 3

Participants were asked to list their expectations from the NGSS workshops. The results were summarised in the following table.

Country	Expectations
Türkiye	The Turkish participants had various expectations from the NGSS workshops, including being informed about STEAM content, mastering STEM education in theory and practice, integrating the knowledge and skills acquired into their syllabus and lesson plans, improving themselves and being aware of innovations in education, developing their skills in STEAM implications and design activities, joining value-added workshops, learning about the aims, scope, and methods of the project, getting the opportunity to know innovative learning environments, gaining a clearer understanding of the scope of the project, utilizing STEAM effectively in the classroom environment, seeing all kinds of educational environments on the way to Erasmus, and learning techniques to make their students active in STEAM activities.
Greece professional teachers	The Greek teachers had several expectations from the NGSS workshops, including learning interesting teaching approaches, understanding the STEAM approach, and gaining new experiences around innovative approaches. They also expressed a desire to collaborate with colleagues, improve their knowledge, acquire new knowledge and apply innovative teaching practices in the classroom. Additionally, they wanted to find ways for children to develop socio-emotional and cognitive skills and abilities necessary for tomorrow's society, such as critical thinking, creativity, imagination, and communication. Overall, the teachers were interested in learning new things that can be applied in the classroom and improving their teaching practices.
Greece Student-teachers	The Greek students had a variety of expectations from the NGSS workshops, including learning about astronomy, teaching techniques, and inquiry-based learning. They also expressed a desire to gain new knowledge and experiences, transform the teaching process, and enhance children's self-efficacy. Additionally, they wanted to learn how to involve natural materials in their teachings, answer children's questions, and design interesting activities for kindergarten. Overall, the students were satisfied with the NGSS workshops and liked them.
Romania	The Romanian participants had several expectations from the NGSS workshops, including familiarization with specific activities related to the program, discovering and understanding the STEAM concept, acquiring new information and good practice models about innovative teaching methods and techniques, learning new methods for approaching scientific content from the perspective of STEAM, deepening the STEAM approach in kindergarten, exploring new techniques of approach in the application of NGSS, finding out as much as possible about preschool STEAM, valuing examples of good practice, learning as much information as possible about the STEAM approach, learning to apply new methods and techniques of learning focused on the student in the classroom, being able to adapt the presented activities

	to the class, and gaining knowledge of the strategies used in STEAM. These expectations reflect a strong interest in gaining a comprehensive understanding of the NGSS program and its application in educational settings, as well as in acquiring new teaching methods and techniques to enhance the learning experience of their students.
Bulgaria	The Bulgarian teachers' expectations from the NGSS workshops included a desire to learn something new, acquire new methods for working with children/students, receive more information on STEM methods, learn about teaching practices from other countries, and express interest in being involved in project activities.
Lithuania	The Lithuanian participants' expectations from the NGSS workshops included a desire for new methods, to enrich and expand their knowledge concerning STEAM, gain practical experience, and receive successful experiences from other countries shared.
Poland	The list of participants' expectations of the NGSS workshops includes: to learn something new; to gain new methods of working with children/pupils; to get more information about the STEAM methods.

In summary, the expectations of the participants from the NGSS workshops varied by country. Turkish participants expected to be informed about STEAM content, master STEM education in theory and practice, and integrate the knowledge and skills acquired into their syllabus and lesson plans. Greek teachers expected to learn interesting teaching approaches, understand the STEAM approach, and collaborate with colleagues to improve their knowledge and apply innovative teaching practices in the classroom. Greek student-teachers expected to learn about astronomy, teaching techniques, and inquiry-based learning, and to transform the teaching process to enhance children's self-efficacy. Romanian participants expected to familiarize themselves with specific activities related to the program, understand the STEAM concept, and acquire new teaching methods and techniques to enhance the learning experience of their students. Bulgarian teachers expected to learn something new, acquire new methods for working with children/students, and receive more information on STEM methods. Lithuanian participants expected to gain practical experience and receive successful experiences from other countries shared. Polish participants also expected to learn something new in terms of the teaching and learning methods and to acquire more information about STEAM.

Question 4

In Question 4 participants were asked to rate the extent to which their expectations mentioned in Question 3 were met (in the scale: Not at all, Little, Somewhat, Much, To a great extent). The top two answers on this question were:

Country	Highest rate	Second highest rate
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Türkiye		To a certain extent (57,9%)	To a great extent (42,1%)
Lithuania		Much (65%)	To a great extent (25%)
Romania		To a great extent (93,3%)	Much (6,7%)
Bulgaria		To a great extent (48%)	Somewhat (38%)
Poland		Much (60%)	To a great extent or Somewhat (20%)
Greece	Professional teachers	To a great extent (61,5%)	Much (38,5%)
	Student-teachers	Much (58,6%)	To a great extent (26,8%)

Question 5

Question 5 asked the participants to rate the overall organisation of the LWs (in the scale: Unsatisfactory, Not very satisfactory, Satisfactory, Very satisfactory, Excellent). The top two answers for this question were the following:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (63,2%)	Very satisfactory (21,1%)
Lithuania		Very satisfactory (55%)	Excellent (45%)
Romania		Excellent (86,7%)	Very satisfactory (6,7%) Satisfactory (6,7%)
Bulgaria		Excellent (90%)	Satisfactory (10%)
Poland		Excellent (90%)	Satisfactory (10%)
Greece	Professional teachers	Excellent: (61,5%)	Very satisfactory (38,5%)

	Student-teachers	Very satisfactory (46,3%)	Excellent (34,1%)
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Question 6

Respondents were asked to rate the duration of the workshops in question 6 (using the scale: Too short, Short, Just right, Long, Too long). The top two ratings on this question were:

Country		Highest rate	Second highest rate
Türkiye		Just right (47,4%)	Long (42,1%)
Lithuania		Just right (95%)	Long (5%)
Romania		Just right (93,3%)	Long (6,7%)
Bulgaria		Just right (48%)	Short or too short (52%)
Poland		Just right (87%)	Too short (13%)
Greece	Professional teachers	Just right (84,6%)	Short (7,7%) Too long (7,7%)
	Student-teachers	Just right (73,2)	Too long (14,6)

Question 7

Participants were asked to evaluate the quality of the venue or platform for face-to-face or online workshops (using the scale: Inappropriate, Not very appropriate, Appropriate, Very appropriate, Excellent). The top two answers regarding venue quality were:

Country	Highest rate	Second highest rate
Türkiye	Appropriate (44,4%)	Very appropriate (33,3%)

Lithuania		Very appropriate (45%)	Excellent (40%)
Romania		The LWs took place online	The LWs took place online
Bulgaria		Excellent (100%)	-
Poland		Excellent (100%)	-
Greece	Professional teachers	Excellent (46,7%)	Appropriate (26,7%) Very appropriate (26,7%)
	Student-teachers	Very appropriate (39%)	Appropriate (31,7%)

The two most common answers to the question about the platform's quality were:

Country		Highest rate	Second highest rate
Türkiye		Very appropriate (36,8%)	Appropriate (31,6%)
Lithuania		Very appropriate (45%)	Excellent (40%)
Romania		Excellent (60%)	Very good (26,66%)
Bulgaria		Excellent (100%)	-
Greece	Professional teachers	Excellent (46,7%)	Appropriate (26,7%) Very appropriate (26,7%)
	Student-teachers	- Student-teachers participated in face-to-face workshops	-

Question 8

Participants were asked to rate the structure of NGSS workshops (using the scale: Inappropriate, Not very appropriate, Appropriate, Very appropriate, Excellent). The most common answers were:

Country		Highest rate	Second highest rate
Türkiye		Very appropriate (52,6%)	Appropriate (36,8%)
Lithuania		Very appropriate (50%)	Appropriate (35%)
Romania		Excellent: (86,7%)	Appropriate (6,7%) Very appropriate (6,7%)
Bulgaria		Very appropriate (48%)	Satisfactory (33%)
Poland		Excellent (66%)	Very satisfactory (32%)
Greece	Professional teachers	Excellent (61,5%)	Appropriate (23,1%) Very appropriate: (23,1%)
	Student-teachers	Appropriate (51,2%)	Very appropriate (24,4%)

Question 9

Participants were asked to provide additional comments on the workshop's structure, duration, and overall organization. A summary of their responses is presented in the following table.

Country	Comments on the workshop structure, duration, and overall organization
Türkiye	The participants expressed various opinions and suggestions regarding the NGSS workshops. Some felt that the number of practical trainings could have been increased, while others mentioned issues with the start times and transportation for face-to-face workshops. Additionally, some participants found the online workshops in the evening to be tiring and

	mentioned concentration problems. However, many participants found the workshops to be well-organized and fruitful, with expert trainers who were supportive. Some also suggested the need for longer workshop durations and expressed interest in being involved in future Erasmus projects as partners. Overall, the workshops were described as highly interactive and productive.
Greece professional teachers	Greek teachers provided positive feedback for the workshop structure, duration, and overall organization, stating that everything was very well organized, great organized, and wonderful.
Greece Student-teachers	Some Greek student-teachers expressed a need for more space during workshops to improve visibility. Others suggested the provision of more information. Overall, student-teachers felt that the workshops were well-organized and provided the right stimuli for reflection. They expressed satisfaction with the workshops, stating that everything was as good as needed and that they learned a lot of new ideas. They also appreciated the cooperation between the professor and the students. While some students found the overall organization of the workshops excellent, others felt it was satisfactory and mentioned learning new things.
Romania	Romanian respondents were satisfied with the workshop structure, duration, and overall organization. They suggested having at least one physical workshop, praised the organization and presentation of the workshops, and recommended that future meetings should be held face to face.
Bulgaria	Bulgarian respondents expressed the following additional comments regarding the workshop structure, duration, and overall organization: They suggested that the workshops would have benefited from a longer duration, expressed satisfaction with the practical aspect of the activities, and showed interest in AuReSSEL, indicating a willingness to be notified once it is launched and operational.
Lithuania	Lithuanian respondents commented that the duration of the workshops was too long.
Poland	Comments confirm that some participants felt that the workshop could have benefited from a longer duration. However, they were pleased and satisfied with the practical aspect of the activities. Participants also expressed a strong interest in AuReSSEL and are keen to register on the project platform.

In summary, participants had various opinions and suggestions regarding the workshop's structure, duration, and overall organization. Some suggested increasing the number of practical trainings, while others mentioned issues with start times and transportation for face-to-face workshops. Some participants found online workshops in the evening tiring and mentioned concentration problems. However, many found the workshops well-organized and fruitful, with expert trainers who were supportive. Some suggested longer workshop durations and expressed interest in being involved in future

Erasmus projects. Greek teachers and student-teachers provided positive feedback for the workshop structure, duration, and overall organization. Romanian respondents were satisfied with the workshop structure, duration, and overall organization, but suggested having at least one physical workshop. Bulgarian respondents suggested longer workshop durations, expressed satisfaction with the practical aspect of the activities, and showed interest in AuReSSEL. Lithuanian respondents commented that the duration of the workshops was too long. Polish respondents suggested longer workshop durations, expressed satisfaction with the practical aspect of the activities, and showed interest in AuReSSEL. Overall, the workshops were described as highly interactive and productive.

Question 10

Question 10 asked participants to rate approach quality in face-to-face and online workshops (in the scale: Unsatisfactory, Not very satisfactory, Satisfactory, Very satisfactory, Excellent). The top two responses for face-to-face workshops were:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (47,1%)	Excellent (35,3%)
Lithuania		Very satisfactory (35%)	Very satisfactory (35%)
Romania		-	-
Bulgaria		Satisfactory (33%)	Excellent (9,5%)
Poland		Very satisfactory (50%)	Satisfactory (40%)
Greece	Professional teachers	Excellent (57,7%)	Very Satisfactory (33,3%)
	Student-teachers	Satisfactory (48,8%)	Very Satisfactory (24,4%) Excellent (24,4%)

The top two responses regarding the quality of the approaches used in the online workshops were:

Country	Highest rate	Second highest rate
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Türkiye		Satisfactory (47,1%)	Excellent (35,3%)
Lithuania		Very satisfactory (45%)	Very satisfactory (45%)
Romania		Excellent (60%)	Very satisfactory (40%)
Bulgaria		-	-
Greece	Professional teachers	excellent (53,3%)	very satisfactory (33,3%)
	Student-teachers	-	-

Question 11

Participants were asked to rate the quality of materials used in face-to-face and online workshops (in the scale: Unsatisfactory, Not very satisfactory, Satisfactory, Very satisfactory, Excellent). The top two responses regarding the quality of resources and materials used in face-to-face workshops were:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (49,8%)	Very satisfactory (30,5%)
Lithuania		Very satisfactory (40%)	Excellent (30%)
Romania		-	-
Bulgaria		Excellent (43%)	Satisfactory (19%)
Poland		Excellent (70%)	Very satisfactory (20%)
Greece	Professional teachers	Excellent (73,3%)	Very satisfactory (20%)
	Student-teachers	Very satisfactory (48,8%)	Excellent (41,5%)

The top two rates for the quality of resources and/or materials used in online workshops were the following:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (49,8%)	Very satisfactory (30,5%)
Lithuania		Very satisfactory (40%)	Satisfactory 30%
Romania		Excellent (80%)	Satisfactory (20%)
Bulgaria		-	-
Greece	Professional teachers	Excellent (66,7%)	Very satisfactory (26,7%)
	Student-teachers	-	-

Question 12

Participants were invited to provide additional comments on workshop approaches and resources. The respondents' comments were summarised in the table below.

Country	Comments for the workshop approaches and resources
Türkiye	Turkish respondents expressed various views on the workshop approaches and resources. They found the approaches and resources to be supportive for NGSS through STEAM and sufficient as a starting point. The resources provided were considered to fulfill their needs on the subject. The instructors were praised for creating a supportive and rich learning environment, and the introduced approaches led to active participation with high interaction. However, some respondents found the approaches to be insufficient. Overall, the approaches and resources were perceived as well-prepared, highly beneficial, and providing rich content for teachers open to development and change, with the workshops being satisfactory and including practical examples.
Greece professional teachers	Greek teachers provided brief feedback on the workshop approaches and resources. Some respondents said everything was great, while others mentioned a variety of teaching approaches and materials.

Greece Student-teachers	Greek students provided positive feedback on the workshop approaches and resources. They found the materials used in the workshops to be new and encouraging for promoting children's learning. The workshops were described as very satisfactory, excellent, helpful, and informative. The material was also considered to be approachable and easy for children to use. Some students expressed a desire for more teaching materials that could be borrowed by all students.
Romania	Romanian respondents provided positive feedback on the workshop approaches and resources. They described the resources and materials as high quality and interesting, with a well-documented and exemplified approach. Additionally, they mentioned that the information on theoretical and practical aspects was of excellent quality and that the resources and materials increased the efficiency of learning. Overall, they found the workshop content to be very interesting.
Bulgaria	Bulgarian respondents provided feedback on the workshop approaches and resources. Most of the comments were focused on the Lego Education sets used in the workshop, with participants giving high assessments of their suitability for problem-based learning and development of students' creativity. Some respondents commented that such materials in the classroom would increase students' motivation for learning. Additionally, several respondents felt that more in-depth training would be needed to master the methodologies and successfully implement them in practice. They also suggested that more examples of how those methods can be differentiated to meet different students' needs would be a useful support for their successful use in practice.
Lithuania	Lithuanian respondents did not make any additional comments for the workshop approaches and resources.
Poland	Most comments focused on the learning platforms used during the workshop, with participants expressing a high opinion of their usefulness for teaching their students. Some participants indicated that such materials in the classroom would increase students' motivation to learn. In addition, they stated that the materials were of high quality and interesting, with a well-documented and exemplary approach.

In summary, Turkish respondents found the workshop approaches and resources to be supportive for NGSS through STEAM and sufficient as a starting point, although some found them insufficient. Greek teachers provided brief feedback, with some mentioning a variety of teaching approaches and materials. Greek students provided positive feedback, describing the materials as new and encouraging for promoting children's learning. Romanian respondents described the resources and materials as high quality and interesting, with well-documented and exemplified approaches. Bulgarian respondents focused on the Lego Education sets used in the workshop, giving high assessments of their suitability for problem-based learning and the development of students' creativity. They also suggested the need for more in-depth training to master the methodologies and successfully implement them in practice. Polish participants gave

a high assessment of the usefulness of the materials presented in the workshops. Overall, the workshop content was perceived as very interesting and beneficial, with the workshops being satisfactory and including practical examples.

Question 13

Question 13 asked participants to rate the amount of new knowledge they acquired in the workshops (using the scale: No new things learnt, Very few, A few, Many, A great deal of new things learnt). The top two answers to the question were the following:

Country		Highest rate	Second highest rate
Türkiye		A great deal of new things learnt (47,4%)	Many (42,1%)
Lithuania		Many (80%)	A few (15%)
Romania		A great deal of new things learnt (73,33%)	Many (26,66%)
Bulgaria		Many (38%) A few (38%)	A great deal of new things (19%)
Poland		A great deal of new things learnt (45%)	Many (55%)
Greece	Professional teachers	A great deal of new things learnt (61,5%)	Many (38,5%)
	Student-teachers	A great deal of new things learnt (53,7%)	Many (39%)

Question 14

Participants were asked to list their favourite takeaways from the workshops. The table below summarizes the takeaways mentioned.

Country	Favourite takeaways
Türkiye	Turkish respondents provided feedback on their favorite takeaways from the workshop. They mentioned practical examples of the impact

	and contribution of socio-emotional learning to design, SCAMPER methods and techniques, innovative STEAM methods and their classroom implementations, the 5E method, design-oriented STEAM practices, WEB 2.0 tools introduced during the workshop, problem-based learning techniques, creative drama, and adapting STEAM to different projects.
Greece professional teachers	Greek teachers provided feedback on their favorite takeaways from the workshop. They mentioned the methodology, the STEAM approach, the SCAMPER technique, different techniques used during the workshops, methodological approaches to involve STEM activities in their educational practice, the involvement of inquiry-based learning with STEAM approach, knowledge and methods, avoiding giving answers to children and encouraging them to search for them, how to integrate the workshops in the educational context, new knowledge and practices, the methodology and materials, and innovative practices of inquiry-based learning and enrichment of educational resources and materials for the implementation of these teaching methods. Additionally, some respondents specifically mentioned the knowledge they gained about inquiry-based learning as their favorite takeaway.
Greece Student-teachers	Greek student-teachers provided extensive feedback on their favorite takeaways from the workshop. They mentioned learning how to involve children in research, recording, and observation, the importance of not answering children's questions but encouraging them to search for their own answers, the various ways to gain children's interest, new ideas, new knowledge and stimuli, material and teaching ideas, activities and models where children have an active role and learn exploratory, the attitude of the teacher in the classroom, the STEAM method and its implementation in the classroom, creative activities using materials available at home, new terms learned, teaching activities and practices, the inquiry-based style of teaching, the importance of good organization and cooperation, flexibility in teaching, the organization of variable and different activities in kindergarten, the importance of keeping children active during teaching, and the way Mrs. Ampartzaki showed them to teach in kindergarten by putting them in the place of children. Additionally, they mentioned specific learnings such as not answering children's questions but encouraging them to search for answers, the importance of doing experiments with children, making teaching more playful and understandable, new knowledge about teaching methodology, the use of research and art as teaching tools, and the importance of inquiry-based learning in kindergarten.
Romania	Romanian respondents provided a variety of favorite takeaways from the workshop, including interactive activities, the methods and means used by the trainers, examples of how to apply various learning strategies and methods, examples of activities, the practical-applicative character of the development, creative thinking and problem-based

	learning, STEAM strategies, how to present the methods, practical approaches to STEAM strategies, presentations and examples of good practice, interactions with colleagues and trainers, and activities that gave them the opportunity to learn something new. Some respondents also enjoyed all the activities and gained knowledge that helped them understand the STEAM approach and try new things in their practice. Additionally, some respondents specifically mentioned examples of good practice and creative thinking and problem-based learning as their favorite takeaways.
Bulgaria	Bulgarian respondents provided feedback on their favorite takeaways from the workshop. They mentioned STEM activities/lessons, the Montessori philosophy, the excellent atmosphere, Lego Education, and the professionalism and skills of the trainers. Respondents also shared that working with beautiful materials would be motivating for children and help them focus on learning through play.
Lithuania	Lithuanian respondents highlighted the following favorite takeaways from the workshop: practical activities and examples, the professionalism and motivation of the lecturers, and the emphasis on communication and collaboration.
Poland	Polish respondents mentioned various favourite elements of the workshops, including interactive activities, methods, and interactive materials or examples of using different learning strategies and methods after creative thinking, problem-based learning, and TEAM strategies. Thus, respondents emphasised that teaching with good materials motivates children to learn.

In summary, participants from different countries provided feedback on their favorite takeaways from the workshop. Turkish respondents mentioned practical examples of socio-emotional learning, SCAMPER methods, innovative STEAM methods, and problem-based learning techniques. Greek professional teachers mentioned the methodology, STEAM approach, SCAMPER technique, and inquiry-based learning. Greek student-teachers mentioned involving children in research, not answering their questions but encouraging them to search for answers, and the importance of keeping children active during teaching. Romanian respondents mentioned interactive activities, learning strategies and methods, practical approaches to STEAM strategies, and examples of good practice. Bulgarian respondents mentioned STEM activities/lessons, the Montessori philosophy, Lego Education, and the professionalism of the trainers. Lithuanian respondents highlighted practical activities and examples, the professionalism of the lecturers, and the emphasis on communication and collaboration. Polish respondents praised the interactive methods and materials which can motivate children to learn.

Question 15

Question 15 evaluates various workshop components presented separately (using the scale: Unsatisfactory, Not very satisfactory, Satisfactory, Very satisfactory, Excellent). The

top two answers regarding the current status of STEAM in the participants' country are listed in the following table.

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (47,4%)	Not very satisfactory (15,8%) Unsatisfactory (15,8%)
Lithuania		Satisfactory (50%)	Satisfactory (50%)
Romania		Excellent (46,66%)	Very satisfactory (46,66%)
Bulgaria		-	-
Poland		-	-
Greece	Professional teachers	Satisfactory (28,6%)	Very satisfactory (35,7%) excellent (35,7%)
	Student-teachers	Satisfactory (39%)	Very satisfactory (29,3%)

The top two answers regarding the quality of *strategies/methodologies recommended at the workshops for the improvement of students' socio-emotional development through STEAM* were the following:

Country		Highest rate	Second highest rate
Türkiye		Excellent (36,8%) satisfactory (36,8%)	Very satisfactory (21,1%)
Lithuania		Satisfactory (50%)	Very satisfactory (40%)
Romania		Excellent (73,34%)	Very satisfactory (20%)

Bulgaria		-	-
Poland		-	-
Greece	Professional teachers	Very satisfactory (42,9%) Excellent (42,9%)	Satisfactory (14,3%)
	Student-teachers	Satisfactory (36,6%) Very satisfactory (36,6%)	Excellent (22%)

The top two answers regarding the *guidelines and examples shown in the workshops on how the above strategies/methodologies can be implemented in practice* were the following:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (47,4%)	Very satisfactory (31,6%)
Lithuania		Very satisfactory (50%)	Satisfactory (40%)
Romania		Excellent (73,34%)	Very satisfactory (26,66%)
Bulgaria		-	-
Poland		-	-
Greece	Professional teachers	Very satisfactory (50%)	Excellent (35,7%)
	Student-teachers	Excellent (6,6%)	Satisfactory (31,7%)

The top two answers regarding *guidelines and examples shown in the workshops on how the above strategies/methodologies can be differentiated to meet different student needs* were the following:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (52,6%)	Very satisfactory (42,1%)
Lithuania		Very satisfactory (40%)	Satisfactory (40%)
Romania		Excellent (73,34%)	Very satisfactory (26,66%)
Bulgaria		-	-
Poland		-	-
Greece	Professional teachers	Excellent (42,9%)	Very satisfactory (35,7%)
	Student-teachers	Satisfactory (39%)	Very satisfactory (34%)

The top two answers regarding the *resources and/or materials shown in the workshops that can support the STEAM strategies/methodologies* were the following:

Country		Highest rate	Second highest rate
Türkiye		Satisfactory (52,6%)	Very satisfactory (26,3%)
Lithuania		Satisfactory (50%)	Very satisfactory (35%)
Romania		Excellent (73,34%)	Very satisfactory (26,66%)
Bulgaria		-	-
Poland		-	-
Greece	Professional teachers	Very satisfactory (42,9%) Excellent (42,9%)	Satisfactory (14,3%)

	Student-teachers	Very satisfactory (44%)	Satisfactory (29,3%)
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Question 16

Question 16 asked participants to mention the difficulties they encountered during the workshops. The following table summarises the responses.

Country	Difficulties
Türkiye	Turkish respondents provided feedback on the difficulties they faced during the workshop. They mentioned that some of the methods presented may be unlikely to be implemented in preschool education, difficulty in allocating time for STEAM-oriented activities due to a strict curriculum, and difficulties in adapting activities to different age groups.
Greece professional teachers	Greek teachers mentioned several difficulties during the workshops, including challenges in balancing workshop participation with working hours, facing technical issues during online workshops, lack of familiarity with technology, and the need to adjust their schedules to participate.
Greece Student-teachers	Greek student-teachers identified several difficulties during the workshops, including challenges in concentrating due to fatigue after teaching in kindergarten, difficulty in understanding new teaching approaches, lack of interaction with the professor, transportation to the university, and the need for more time or meetings. Additionally, some students reported difficulties in understanding scientific terms and explanations in English, designing pedagogically appropriate activities for children, and organizing activities through inquiry-based learning. However, some students found the workshops interesting and did not encounter any difficulties, while others reported that their questions were solved during the workshops.
Romania	Romanian respondents highlighted several difficulties encountered during the workshops, including internet connection problems, time management challenges, the preference for physical workshops, and the difficulty in thinking about activities for preschoolers using the presented methods. However, the majority stated that they did not encounter any difficulties during the workshops.
Bulgaria	Bulgarian respondents identified several challenges during the workshops, including doubts about the suitability of the methods promoted by the NGSS project for younger learners, the need for materials, tools, and equipment for STEM activities, and the difficulty in establishing cross-curricular links for real STEM education due to the rare practice of joint planning and cross-curricular work, especially when involving subjects from different areas.

Lithuania	Lithuanian respondents mentioned that the lack of language skills was a difficulty they faced during the workshops.
Poland	Some participants expressed some difficulties in understanding STEM teaching methodologies, especially in the context of working with younger learners such as pre-schoolers. Participants highlighted the need for additional materials, equipment in schools or kindergartens to enable children to engage in hands-on activities.

In summary, participants from different countries identified various difficulties during the workshops. Turkish respondents mentioned difficulties in implementing some methods in preschool education, allocating time for STEAM activities, and adapting activities to different age groups. Greek professional teachers faced challenges in balancing workshop participation with working hours, technical issues during online workshops, and lack of familiarity with technology. Greek student-teachers faced difficulties in understanding new teaching approaches, scientific terms and explanations in English, and designing pedagogically appropriate activities for children. Romanian respondents faced internet connection problems, time management challenges, and difficulty in thinking about activities for preschoolers using the presented methods. Bulgarian respondents had doubts about the suitability of the methods for younger learners, the need for materials and equipment, and the difficulty in establishing cross-curricular links. Lithuanian respondents faced difficulties due to the lack of language skills. Polish respondents highlighted their difficulty to understand how methods and materials can be developed further for younger learners.

Question 17

Question 17 inquired the participants to rate the effect of the NGSS workshops on various aspects (in the scale: Not at all, Little, Somewhat, Much, To a great extent). Each aspect was presented individually.

The top two responses related to the impact of the workshops on the teaching style and methods of the participants were as follows:

Country	Highest rate	Second highest rate
Türkiye	To some extent (68,4%)	To a great extent (31,6%)
Lithuania	Much (75%)	Little (15%)
Romania	Excellent (73,34%)	Very satisfactory (26,66%)
Bulgaria	-	-

Poland		To a great extent (60%)	-
Greece	Professional teachers	Much (50%) To a great extent (50%)	
	Student-teachers	Much (48,8%)	To a great extent (46,34%)

The top two responses regarding how the workshops influenced participants to try new things in their practice were:

Country		Highest rate	Second highest rate
Türkiye		To some extent (47,4%)	To a great extent (42,1%)
Lithuania		Much (80%)	To a great extent (5%)
Romania		To a great extent (100%)	
Bulgaria		-	-
Greece	Professional teachers	Much (57,1%)	To a great extent (42,9%)
	Student-teachers	To a great extent (58,5%)	Much (36,6%)

The two most common responses regarding the efficacy of the workshops in understanding the STEAM approach were:

Country		Highest rate	Second highest rate
Türkiye		To some extent (57,9%)	To a great extent (42,1%)

Lithuania		Much (80%)	To a great extent (5%)
Romania		To a great extent (100%)	
Bulgaria		-	-
Poland		-	-
Greece	Professional teachers	To a great extent (57,1%)	Much (42,9%)
	Student-teachers	Much (46,3%)	To a great extent (36,6%)

The two most common responses to how much more confident participants felt in using the STEAM approach in their teaching practice after the workshops were:

Country		Highest rate	Second highest rate
Türkiye		To some extent (52,6%)	To a great extent (42,1%)
Lithuania		Much (80%)	To a great extent (10%)
Romania		To a great extent (73,34%)	Much (26,66%)
Bulgaria		-	-
Poland		To a great extent (65%)	-
Greece	Professional teachers	To a great extent (57,1%)	Much (42,9%)
	Student-teachers	To a great extent (47,24%)	Much (45,8%)

The two most common responses regarding participants' conviction of the usefulness and necessity of the STEAM approach were as follows:

Country		Highest rate	Second highest rate
Türkiye		To a great extent (63,2%)	To some extent (31,6%)
Lithuania		Much (90%)	To a great extent (5%)
Romania		To some extent (46,66%)	To a great extent (26,66%)
Bulgaria		-	-
Greece	Professional teachers	To a great extent: (57,1%)	Much (42,9%)
	Student-teachers	Much (51,2%)	To a great extent (29,3%)

The top two responses regarding the degree to which participants were convinced about the impact of STEAM approach on students' socio-emotional development were:

Country		Highest rate	Second highest rate
Turkey		To a great extent (52,6%)	To some extent (47,4%)
Lithuania		Much (75%)	To a great extent (20%)
Romania		To some extent (46,66%)	To a great extent (33,33%)
Bulgaria		-	-
Greece	Professional teachers	To a great extent (57,1%)	Much (42,9%)
	Student-teachers	Much (46,3%)	To a great extent (29,3%)

The top two answers regarding whether participants would recommend the STEAM approach to their colleagues were:

Country		Highest rate	Second highest rate
Türkiye		To a great extent (52,6%)	To some extent (47,4%)
Lithuania		Much (75%)	To a great extent (20%)
Romania		To a great extent (93,33%)	To some extent (6,67%)
Bulgaria		-	-
Greece	Professional teachers	To a great extent (64,3%)	Much (35,7%)
	Student-teachers	To a great extent (46,3%)	Much (29,3%)

The top two rates the following statement received by the participants *“the workshops were very interesting, but I cannot use these approaches in my practice”* are presented in the table below:

Country		Highest rate	Second highest rate
Türkiye		To some extent (36,8%)	Not at all (31,6%)
Lithuania		Somewhat 40%	Much 25%
Romania		To some extent (33,33%)	To a great extent (20%)
Bulgaria		-	-
Greece	Professional teachers	Not at all (78,6%)	To a great extent (21,4%)
	Student-teach	Much	To a great extent

	ers	(29,3%)	(9,5%)
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Question 18

Participants were asked if they would recommend NGSS workshops to their colleagues. The responses are presented in the table below.

Country		Yes	No
Türkiye		17	2
Lithuania		20	-
Romania		28	1
Bulgaria		19	2
Poland		19	1
Greece	Professional teachers	15	-
	Student-teachers	41	-

Question 19

Participants were asked to provide further comments on the content of the NGSS workshops. The responses were summarised in a table.

Country	Additional comments
Türkiye	Turkish participants provided feedback on the NGSS workshops, suggesting that teachers should have the opportunity to implement what they learned in their own classrooms and receive feedback on the outcomes. They also expressed a preference for more face-to-face workshops, recommended the use of incentives for active participation, and proposed the preparation of informative bulletins for those unable to attend face-to-face workshops. Additionally, they expressed a desire for workshops to be arranged more frequently and to include teachers in Erasmus projects.

Greece professional teachers	Greek teachers expressed a desire for more training actions to expand the application of the NGSS methodologies. They also expressed interest in continuing training in a similar program and highlighted the comprehensive coverage of various areas of pedagogy in the workshops. Additionally, they expressed gratitude for the opportunity to participate in the educational and innovative program and expressed a hope to implement the educational practices offered through the workshops.
Greece Student-teachers	Greek student-teachers provided positive feedback on the NGSS workshops, describing them as perfect, interesting, and informative. They found the examples of activities and "activity simulations" to be particularly useful in guiding their approach to teaching. They expressed gratitude for the experience and found the content to be understandable and valuable in encouraging creativity and imagination. They also expressed a desire for more interaction with the materials and a hope to implement what they learned in their kindergarten.
Romania	Romanian participants provided positive feedback on the NGSS workshops, expressing gratitude for the opportunity to participate and congratulating the project team. They also highlighted the value of performing experiments using the STEAM approach and expressed interest in practical activities based on methods such as Scamper, Problem Based Learning, and Design Thinking for activities with preschoolers. Additionally, they thanked the trainers for the interesting workshops.
Bulgaria	Bulgarian participants expressed a need for longer and more in-depth training to master the NGSS methodologies. They also expressed interest in future project activities and training.
Lithuania	Lithuanian participants did not make any additional comments for the contents of NGSS workshops.
Poland	-

Overall, additional comments regarding the NGSS Local Workshops included a variety of suggestions such as the following: Turkish participants suggested that teachers should have the opportunity to implement what they learned in their own classrooms and receive feedback on the outcomes. They also expressed a preference for more face-to-face workshops, recommended the use of incentives for active participation, and proposed the preparation of informative bulletins for those unable to attend face-to-face workshops. Additionally, they expressed a desire for workshops to be arranged more frequently and to include teachers in Erasmus projects. Greek teachers expressed a desire for more training actions to expand the application of the NGSS methodologies and highlighted the comprehensive coverage of various areas of pedagogy in the workshops. Greek student-teachers provided positive feedback, describing the workshops as perfect, interesting, and informative. They found the examples of activities and "activity simulations" particularly useful and expressed a desire for more interaction with the materials. Romanian participants expressed gratitude for the opportunity to participate, highlighted the value of performing experiments using the STEAM approach,

and expressed interest in practical activities based on methods such as Scamper, Problem Based Learning, and Design Thinking for activities with preschoolers. Bulgarian participants expressed a need for longer and more in-depth training to master the NGSS methodologies and expressed interest in future project activities and training. Lithuanian participants did not make any additional comments for the contents of NGSS workshops.

Summarising

This is an evaluation report of the Local Workshops for the Next Generation Science Standards through STEAM (NGSS) project. The report covers the workshops that took place in partner countries, including Turkey, Lithuania, Romania, Bulgaria, Poland and Greece. The workshops aimed to introduce local teachers to the importance and methods of the STEAM approach.

The evaluation report includes feedback and responses from participants in the workshops. The report covers various aspects of the workshops, including participant satisfaction, difficulties encountered, favorite takeaways, and suggestions for improvement.

The report highlights the participants' feedback on the workshops, including their satisfaction levels and the difficulties they encountered during the sessions. For example, Turkish participants expressed various opinions and suggestions regarding the NGSS workshops. Some felt that the number of practical trainings could have been increased, while others mentioned issues with the start times and transportation for face-to-face workshops. Additionally, some participants found the online workshops in the evening to be tiring and mentioned concentration problems. However, many participants found the workshops to be well-organized and fruitful, with expert trainers who were supportive.

The report also provides insights into the favorite takeaways mentioned by the participants, such as specific methodologies, techniques, and approaches they found valuable. For example, Greek student-teachers provided positive feedback on the NGSS workshops, describing them as perfect, interesting, and informative. They found the examples of activities and "activity simulations" to be particularly useful in guiding their approach to teaching.

Additionally, the report includes suggestions for improvement, with participants expressing their opinions on various aspects of the workshops. For example, Turkish participants suggested that teachers should have the opportunity to implement what they learned in their own classrooms and receive feedback on the outcomes. They also expressed a preference for more face-to-face workshops, recommended the use of incentives for active participation, and proposed the preparation of informative bulletins for those unable to attend face-to-face workshops.

Overall, the report offers a comprehensive overview of the NGSS Local Workshops, presenting both positive feedback and areas for potential enhancement. The report provides valuable insights into the participants' experiences and opinions, which can be useful for future educational initiatives.

Appendix I – The evaluation questionnaire

The following pages present the questionnaire used to evaluate the Local Workshops.



NGSS workshops evaluation form

Survey description

Dear participants,

Please, give your feedback regarding the NGSS workshops. Your opinion about the organization, topics, and approaches used in the workshops is important to us since it will help us improve the NGSS project. Your answers will be handled anonymously.

1. Are you a teacher in... *

- Kindergarten/preschool
- Primary school
- Other

2. In case the answer to the above question is "other", please explain... *

Your answer

3. What were your expectations from the NGSS workshops? *

Your answer

4. Meeting expectations *

	Not at all	Little	Somewhat	Much	To a great extent
To what extent have your expectations about the content of the training been met?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. The overall organization *

E.g. timely start, length of the sessions, etc.

6. The duration of workshops *

	Too short	Short	Just right	Long	Too long
Please, rate the duration of the workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Unsatisfactory	Not very satisfactory	Satisfactory	Very satisfactory	Excellent
Please, rate the overall workshop organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. The quality of venue or platform used for the NGSS workshops *

	Inappropriate	Not very appropriate	Appropriate	Very appropriate	Excellent
Please, rate the venue used in face-to-face workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please, rate the platform used in online workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. The structure of the NGSS workshops *

	Inappropriate	Not very appropriate	Appropriate	Very appropriate	Excellent
Please, rate the structure of the NGSS workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Would you like to make any additional comments for the workshop structure, duration, and overall organization? *

Your answer

10. The quality of the approaches used in face-to-face and online workshops *

E.g. lecturing, interactions, practical tasks, etc.

	Unsatisfactory	Not very satisfactory	Satisfactory	Very satisfactory	Excellent
Please, rate the approaches used in face-to-face workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please, rate the interactions initiated in online workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. The quality of resources and/or materials used in the workshops *

For face-to-face workshops: presentations, worksheets, pictures, books, audiovisual materials, activity materials, etc. For online workshops: presentations, pictures, audiovisual materials, platforms for interaction such as "padlet", etc.

12. Would you like to make any additional comments for the workshop approaches and resources? *

Your answer

13. New things learnt *

	No new things learnt	Very few	A few	Many	A great deal of new things learnt
Please, rate the workshop content in terms of new things you learned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. What are your favourite takeaways from the workshops? *

Your answer

15. Please, rate the quality of the following workshop components *

Please, rate the quality of the resources and materials used in online workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Unsatisfactory	Not very satisfactory	Satisfactory	Very satisfactory	Excellent

15. Please, rate the quality of the following workshop components *

	Unsatisfactory	Not very satisfactory	Satisfactory	Very satisfactory	Excellent
Information about the current status of STEAM in partner countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strategies/methodologies used in STEAM (e.g. SCAMPER, problem-based learning, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strategies/methodologies to improve students socioemotional development through STEAM	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guidelines and examples on how the above strategies/methodologies can be implemented in practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guidelines and examples on how the above strategies/methodologies can be differentiated to meet different student needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resources and/or materials that can support the above strategies/methodologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. What was the most difficult thing for you during the workshops? *

Your answer

17. Please, rate the impact of the NGSS workshops in your teaching practice *

	Not at all	Little	Somewhat	Much	To a great extent
What I learnt during the workshops may influence my teaching style and approaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The workshops inspired me to try new things in my practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The workshops helped me understand the STEAM approach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more confident to use the STEAM approach in my teaching practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was convinced about the usefulness and necessity of the STEAM approach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was convinced about the impact of the STEAM approach to students' socio-emotional development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would recommend the STEAM approach to my colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The workshops were very interesting, but I cannot use these approaches in my practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Would you recommend the NGSS workshops to your colleagues? *

- Yes
 No

19. Would you like to add anything else regarding the content of the NGSS workshops? *

Your answer

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