

# STEAM BO.SS

boosting soft skills

## General report in activity satisfaction



Sapere utile



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## Introduction

Some of the main objectives of the STEAM Bo. SS project are to develop the soft skills of VET students through STEAM approach activities designed and delivered together with local companies, as well as to build STEAM approach pilot projects in all partner countries that respond to the real needs of the labour market.

In order to achieve these goals, Work Package 2, which was developed from 23 November to 25 January, carried out some essential project activities that emphasised the role of the teacher/trainer in developing students' skills and leading innovation in teaching.

These activities included the creation of a MOOC on the theme of developing soft skills through activities designed with the STEAM approach; a two-day residential training camp for 12 teachers/trainers (3 per country) to share good practices/develop knowledge and skills; and a training of trainers to train teachers/trainers to use the STEAM approach for developing soft and transversal skills.

These activities involved a large number of trainers and teachers.

As one of the main concerns of the project is to ensure that the above objectives are fully achieved, it was essential to know whether this had been achieved. Therefore, at the end of all training activities, participants were asked to complete a satisfaction survey.

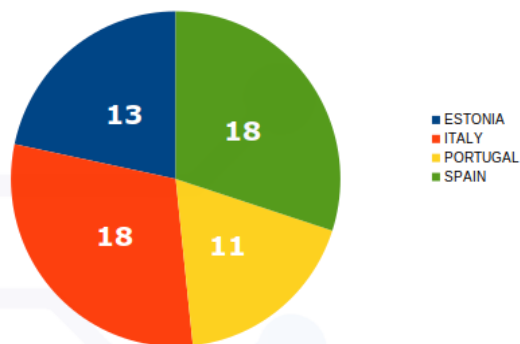
Through the completion of these surveys we were able to identify the aspects that were considered most satisfactory and useful for the participants' teaching practice, as well as those that were not successful or whose future use in teaching was not so obvious.

## MOOC Activity Satisfaction

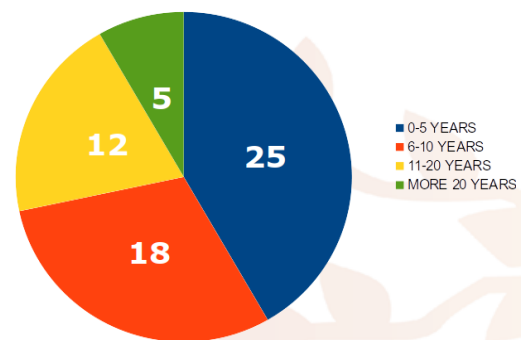
The creation of a MOOC on the topic of soft/transversal skills development through activities designed with the STEAM approach was one of the main tasks of Work Package 2. Each partner produced 5 videos, for a total of 25, divided into different sections: soft skills, STEAM approach, STEAM by examples, co-design and evaluation.

Almost 90 teachers from the four partner countries completed the training and 60 of them gave feedback by filling in a final survey, the results of which are analysed below, divided into the most relevant questions of the survey.

Participants by Country



Years of Teaching Experience

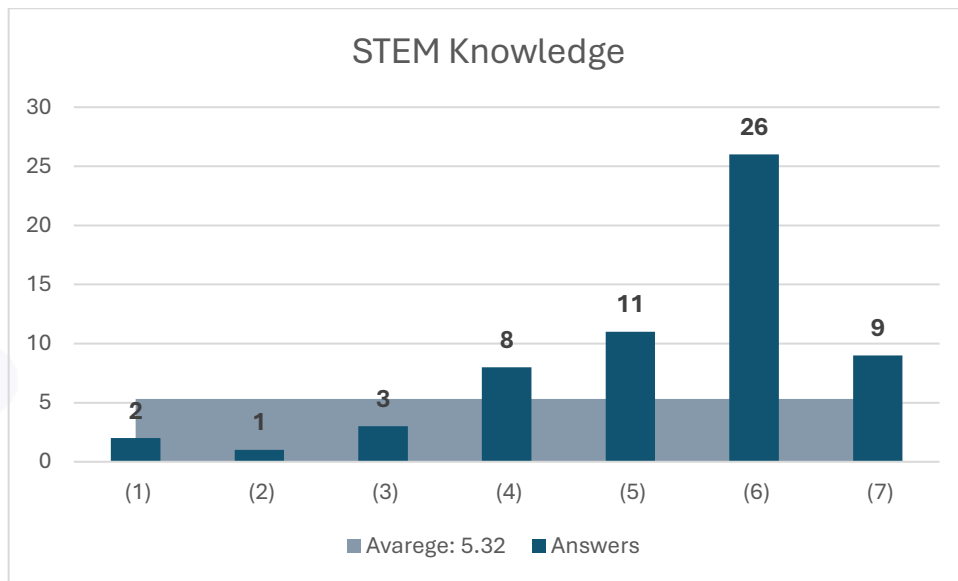


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- (STEM\_knowledge) On a scale from 1(I've never heard of it) to 7(Extremely familiar), how familiar are you with the concept of STEM education?

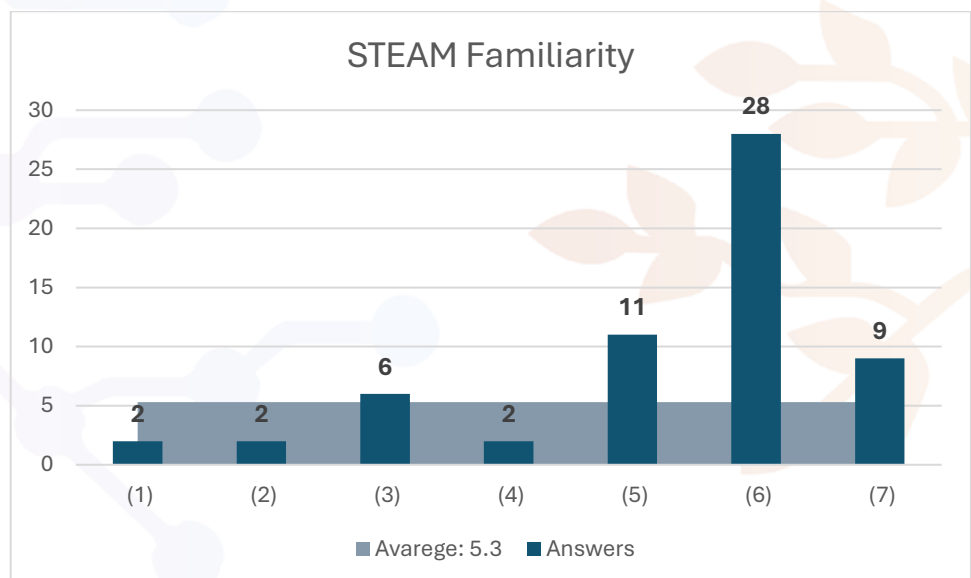
Most participants were familiar with the concept of STEM education, but few had a full understanding of it.

<sup>1</sup> Participants by country and years of experience



- (STEAM\_familiarity) On a scale from 1(I've never heard of it) to 7(Extremely familiar), how familiar are you with the concept of STEAM education?

It is interesting to note that the answers to this question were quite similar to the previous one, which proves that the inclusion of the arts in the STEM concept was widely known.

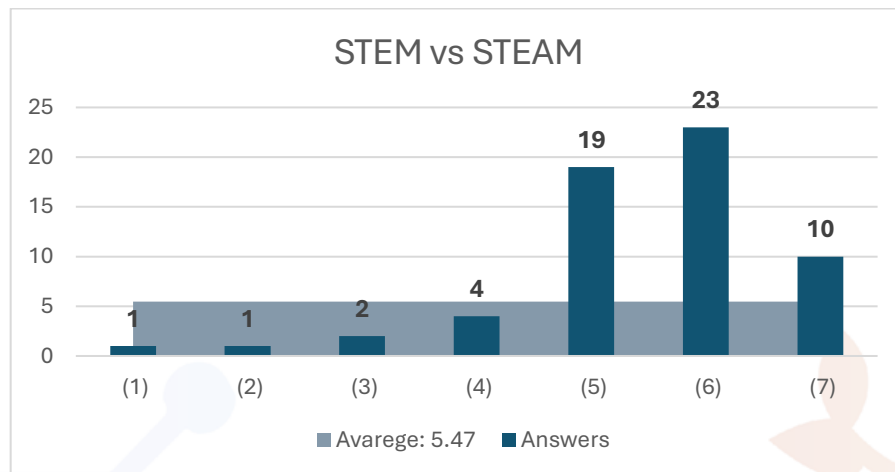


<sup>2</sup> STEAM knowledge

<sup>3</sup> Familiarity with STEAM education

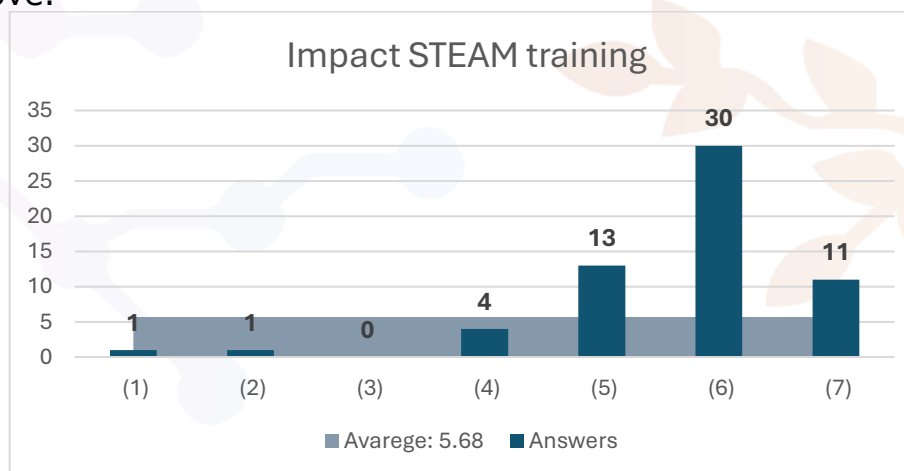
- (STEM\_vs\_STEAM) On a scale from 1(No difference at all) to 7(Completely different), how much do you think STEM (Science, Technology, Engineering, Mathematics) differs from STEAM (Science, Technology, Engineering, Arts, Mathematics)?

For the majority, including the arts makes STEAM substantially different from STEM.



- (Impact\_STEAM\_training) On a scale from 1(No change) to 7(Completely transformed), to what extent has participating in a STEAM training program changed your perception and teaching practices related to collaboration, pedagogy, self-efficacy, and arts integration?

This is very relevant information, as in most cases participants claimed that participation in this programme had significantly changed their perceptions and teaching practices in relation to the concepts expressed above.

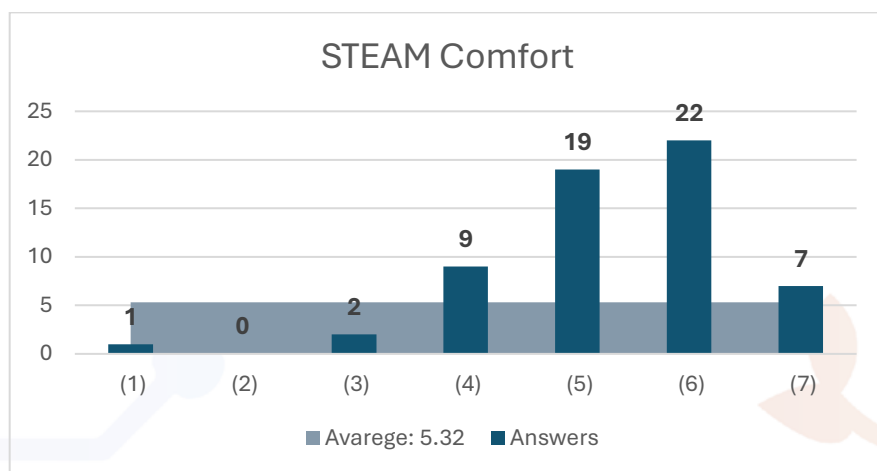


<sup>4</sup> STEM vs STEAM

<sup>5</sup> STEAM impact

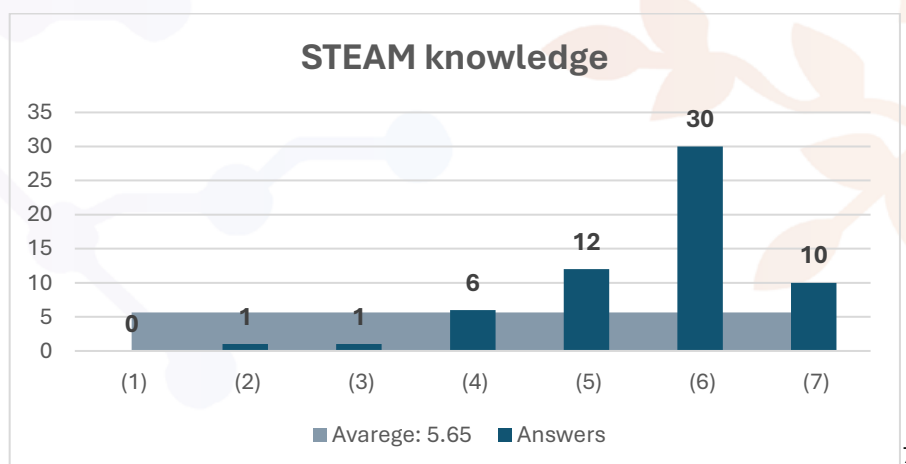
- (STEAM\_comfort) (On a scale from 1(No change) to 7(Completely transformed), how significantly has your comfort in teaching STEAM changed after participating in the training program?)

In this case, the majority of participants also expressed a positive feeling about their skills after the training, as they generally felt more comfortable teaching STEAM after the training.



- (STEAM\_knowledge) On a scale from 1(No change) to 7(Completely transformed), how significantly has your STEAM content knowledge changed after participating in the training program?

Again, the responses show a very positive response to the training, with 40 of the participants stating that their knowledge of STEAM was very or completely changed after completing the MOOC.

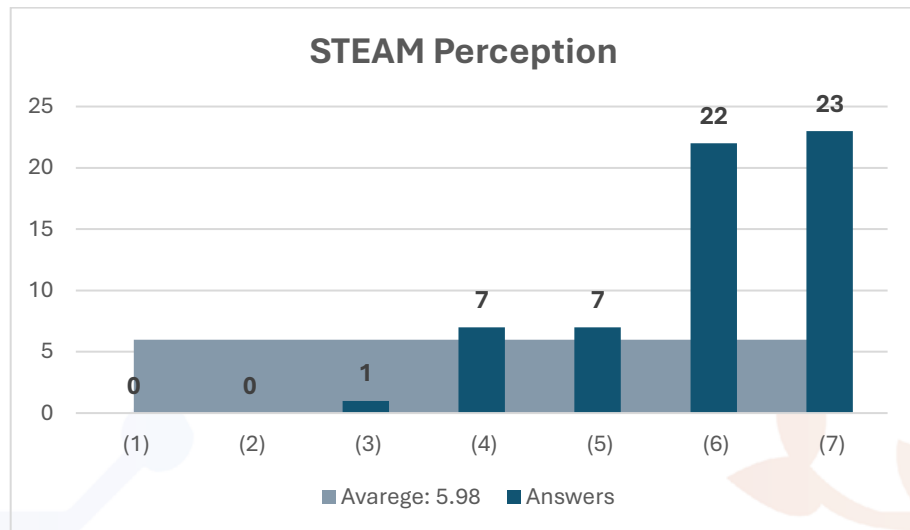


<sup>6</sup> STEAM comfort

<sup>7</sup> STEAM knowledge after camp

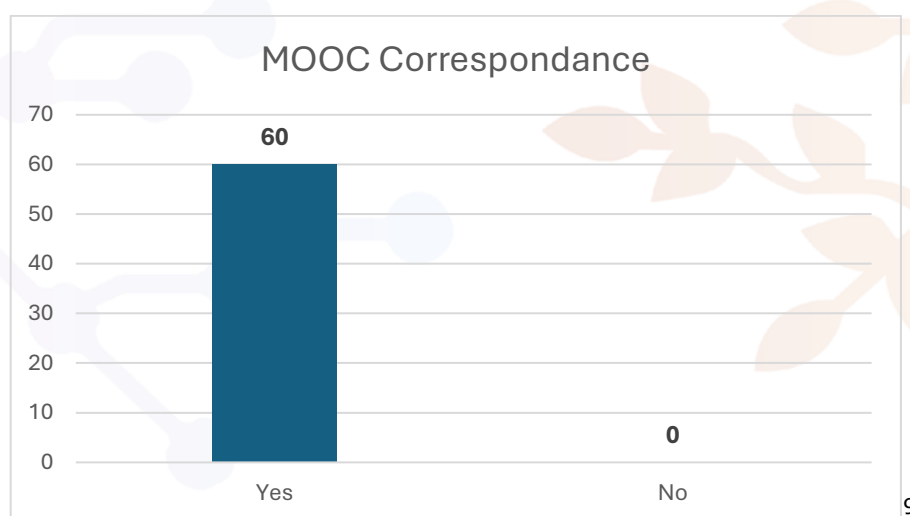
- (STEAM\_perception) On a scale from 1(Very negative) to 7(Extremely positive), how would you describe your perception of STEAM education and its implementation in your educational setting?

In most cases, the implementation of STEAM education in their educational setting was seen as very positive.



- (MOOC\_correspondance) Do you consider that the videos that make up the MOOC correspond to the contents and materials included in it?

There was a complete positive unanimity

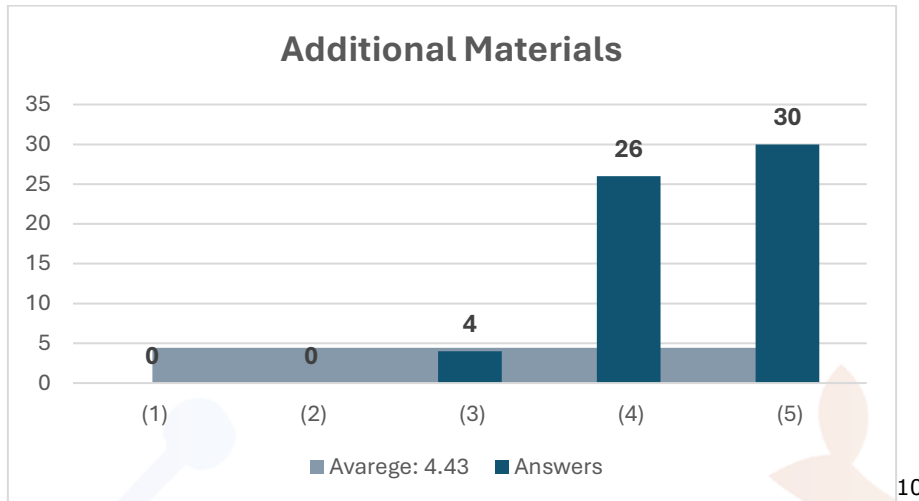


<sup>8</sup> STEAM perception

<sup>9</sup> MOOC correspondance

- (Additional\_materials) On a scale from 1(Not at all) to 5 (Completely) Do you think the additional materials reinforce the content presented in the videos?

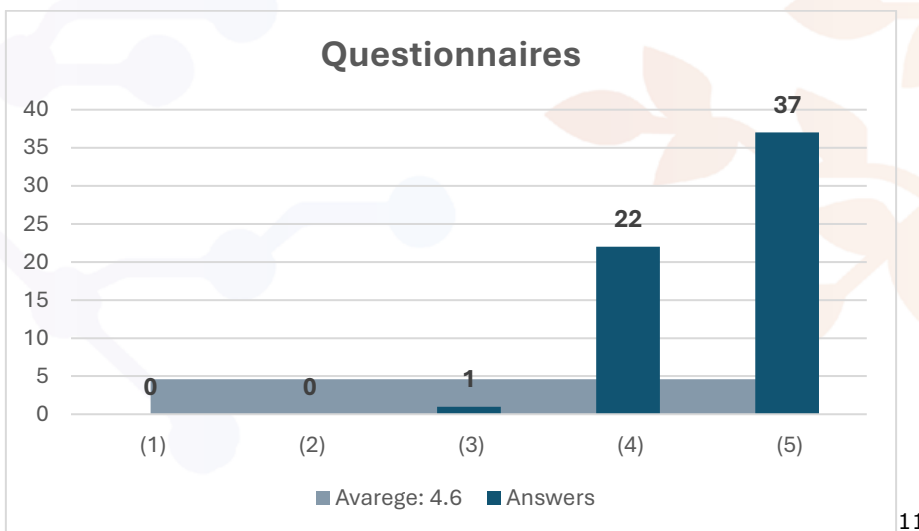
According to the participants, the additional materials achieved their purpose of reinforcing the content of the videos.



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- (Questionnaires) On a scale from 1(Not at all) to 5 (Completely) In your opinion, do the questionnaires match the contents shown in the videos and in the materials provided?

Fortunately, most respondents were satisfied with the appropriateness of the questionnaires to the content of the videos.



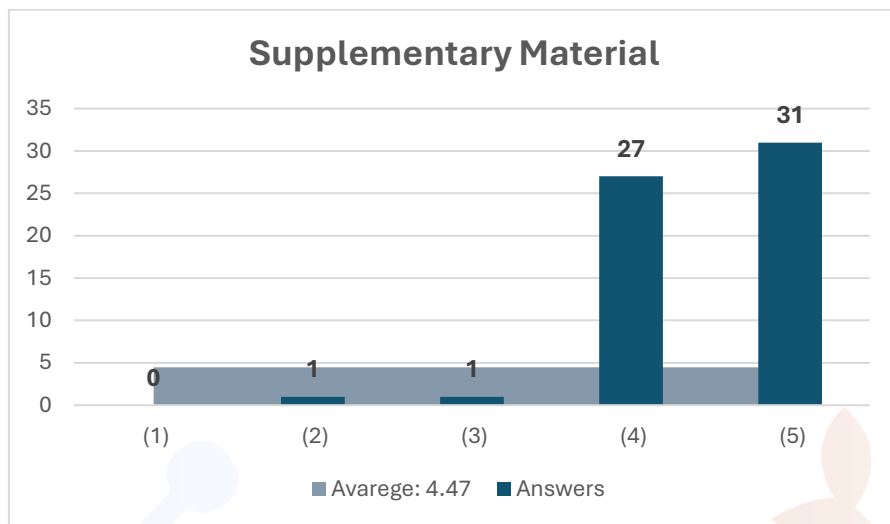
11

<sup>10</sup> Additional materials

<sup>11</sup> Appropriateness of questionnaires

- (Supplementary\_material) How did you find the use of the platform and access to supplementary materials and resources?

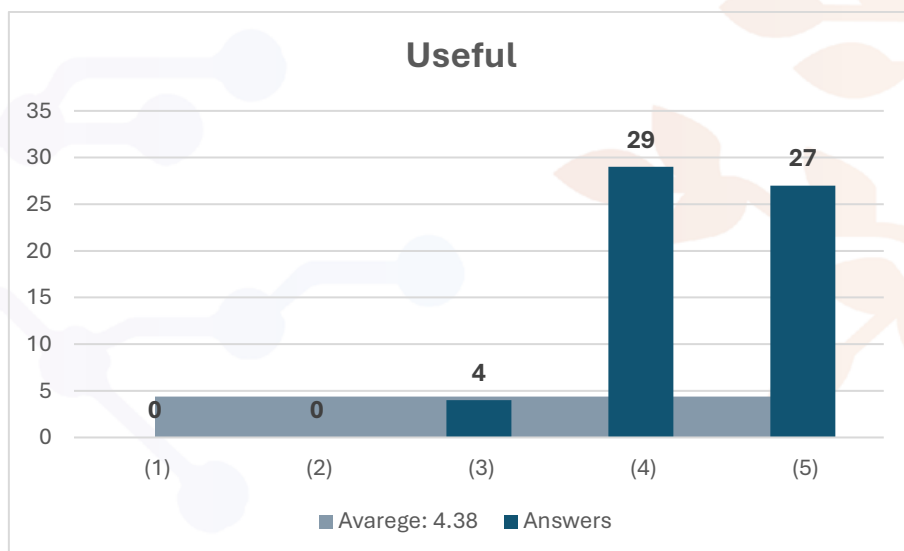
The majority of respondents highlighted the friendly use of the platform and its resources and materials.



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- (Usefulness) To what extent do you consider the MOOC to be useful in your future teaching?

It is very inspiring and rewarding to know that the vast majority of teachers found the MOOC useful for their future teaching.



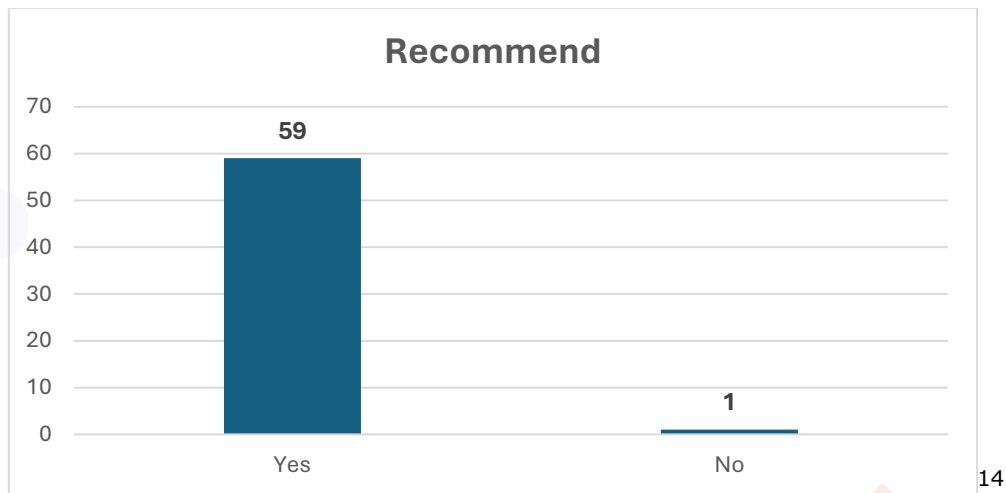
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<sup>12</sup> Access and use of the platform

<sup>13</sup> Usefulness of the MOOC

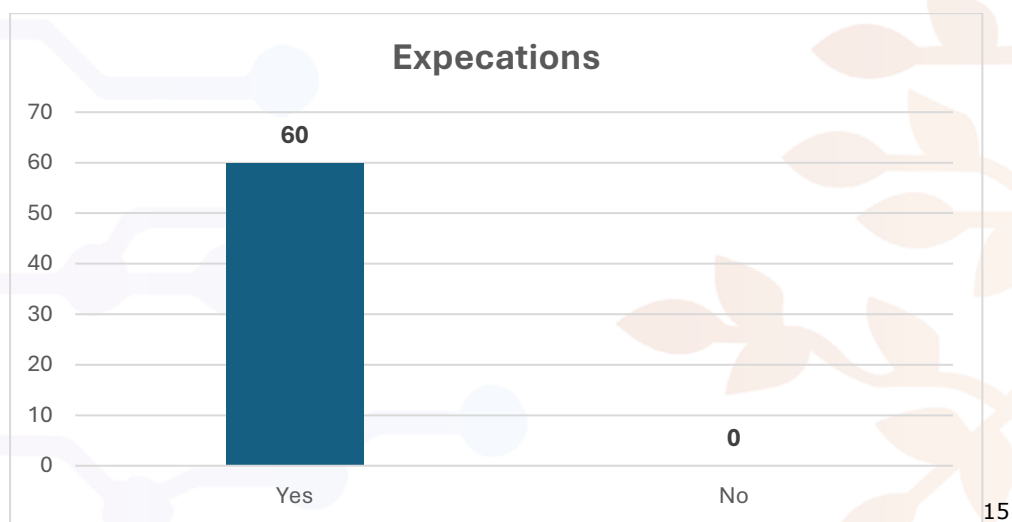
- (Recommend) Would you recommend its use to other teachers?

59 out of 60 participants would recommend the MOOC to others.



- (Expectations) Did the course meet your expectations?

The teachers agreed that the course had met their expectations.

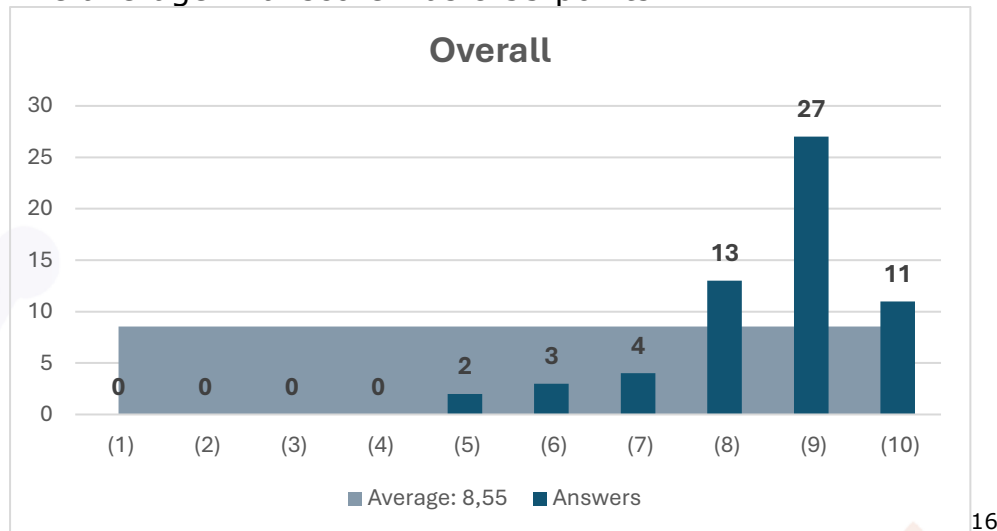


<sup>14</sup> Recommend to others

<sup>15</sup> Fulfillment of expectations

- (Overall) Finally, could you give an overall assessment of the training?

The average final score was 8.55 points.



The survey also included two relevant open-ended questions about the main challenges in implementing STEAM project-based learning activities in the classroom and how a STEAM education programme might include support mechanisms to address these challenges, and although it was impossible to include all comments, here is a summary of some of the more meaningful ones:

- *"Limited time: STEAM projects require time for exploration and problem-solving."*
- *"Diverse skill levels: Managing varying levels of proficiency in STEAM subjects."*
- *"Student's motivation problems."*
- *"The main challenges include limited resources and time for hands-on activities, as well as ensuring all students actively participate and collaborate effectively. Additionally, aligning projects with curriculum standards can be difficult."*
- *"Balance between student providing guidance and allowing for creative freedom exploration and innovation."*

<sup>16</sup> Overall assessment

- *"For me, the time constraints, resource limitations, such as a lack of materials, technology, and funding, also pose a barrier. Managing student collaboration is another challenge, as ensuring teamwork and equal participation can be difficult."*
- *"A STEAM training program could address challenges by offering practical resources like project templates or case studies. In my class, using collaborative tools and breaking projects into smaller steps has worked well. I plan to explore mentorship opportunities to share solutions. Support communities and professional development would make overcoming these challenges easier."*
- *"A STEAM training program could include support mechanisms like access to shared resources, mentorship from industry experts, and flexible, modular lesson plans. It could also provide collaboration tools and professional development for teachers to enhance facilitation skills."*
- *"I think the problem is not the STEAM method but the specific infrastructure (in each school or institution). Maybe a solution could be the collaboration with external partners that provide resources or materials that let them follow a STEAM program."*

## Training Camp Activity Satisfaction

The aim of the training camp was to train teachers/trainers to use the STEAM approach for the development of soft and transversal skills and the activity consisted of a 2-day residential camp for 12 teachers/trainers (3 from each partner country) + 1 trainer from each partner.

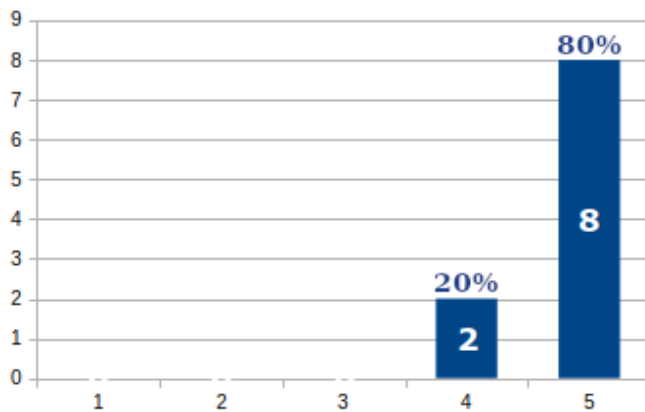
During the training camp, which took place in Modena on 24 November, the participants were involved in practical and experiential learning activities, using the peer-to-peer methodology to encourage collaborative learning.

Participants were encouraged to respond on a scale of 1 (very negative) to 5 (very positive) to different aspects of the training they had just received.

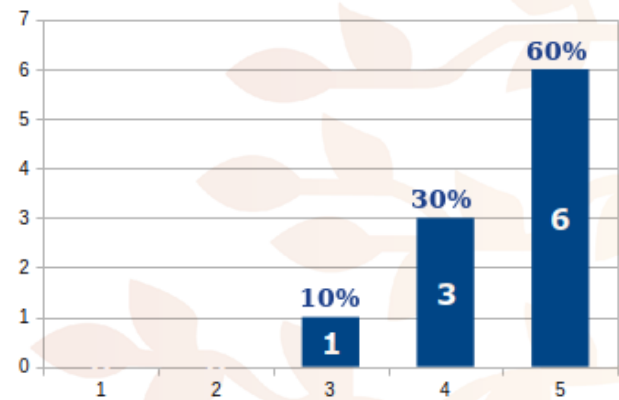
In general, the responses show a high level of satisfaction of the participants regarding aspects such as relevance, personal interest, materials offered, attractiveness of the training, etc.

Some of the most important aspects are presented below.

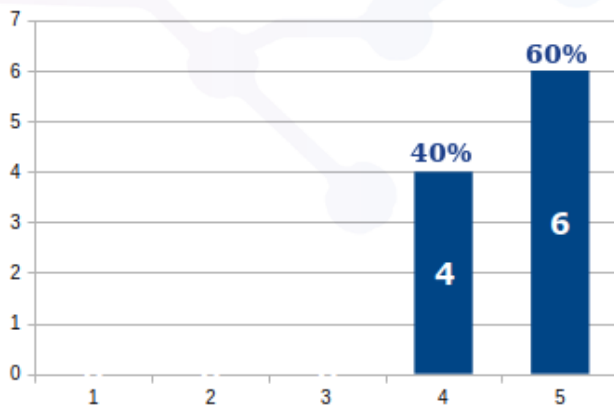
Summary for Organisation



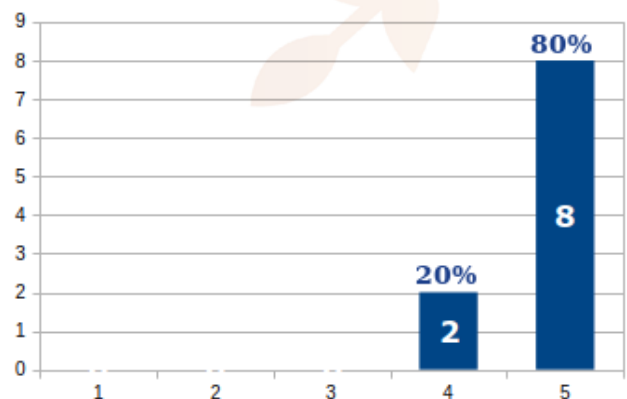
Summary for Relevance



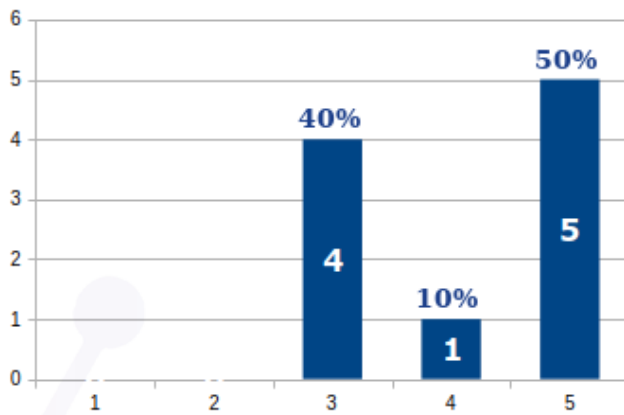
Summary for Personalinterest



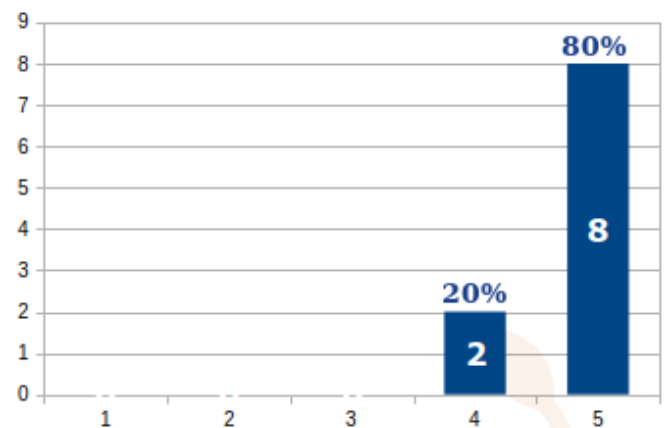
Summary for Materials



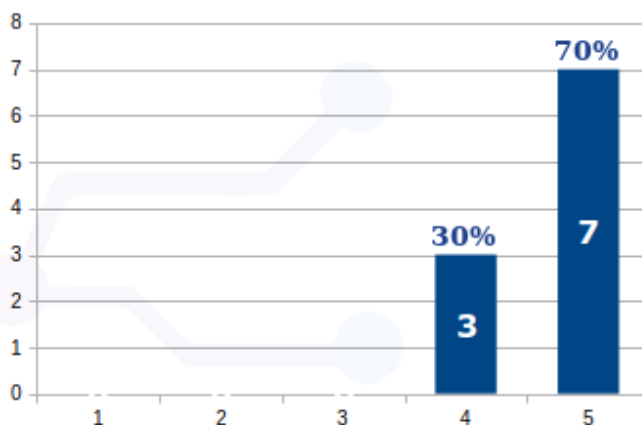
Summary for Scopeduration



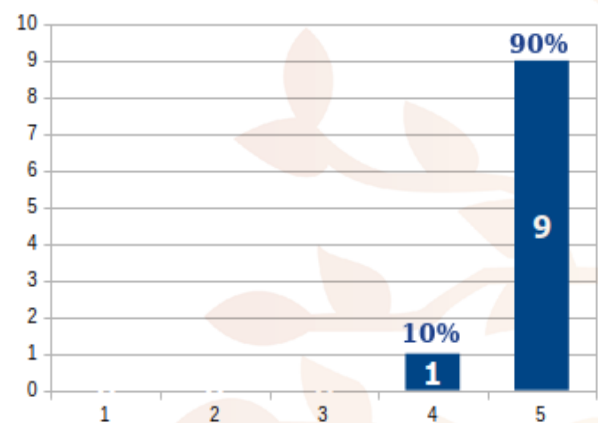
Summary for Overall



Summary for Attractiveness



Summary for Facilitators



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The comments, although few, generally confirm the positive and useful nature of the training.

In terms of organisation, it was noted that the structure and tasks were clear, although one person suggested a more practical and less theoretical approach. With regard to the relevance of the content to the teachers' daily work, the results were also positive and useful, although one of them pointed out the difficulty of implementing it in the daily tasks.

The personal interest of the activities was also high, and one of the teachers pointed out the STEAM approach as the most noteworthy.

The materials were very much appreciated by all participants, although some felt that the duration of the scope was too short and that the daily timetable was too demanding.

The overall comments were also very positive, highlighting the opportunity to exchange ideas, the enjoyable dimension of the activities and the thoughtful planning.

No comments were recorded on the attractiveness of the methodology and, finally, on the competence and commitment of the facilitators, but the responses indicate a high level of satisfaction.

## Train the trainers Activity Satisfaction

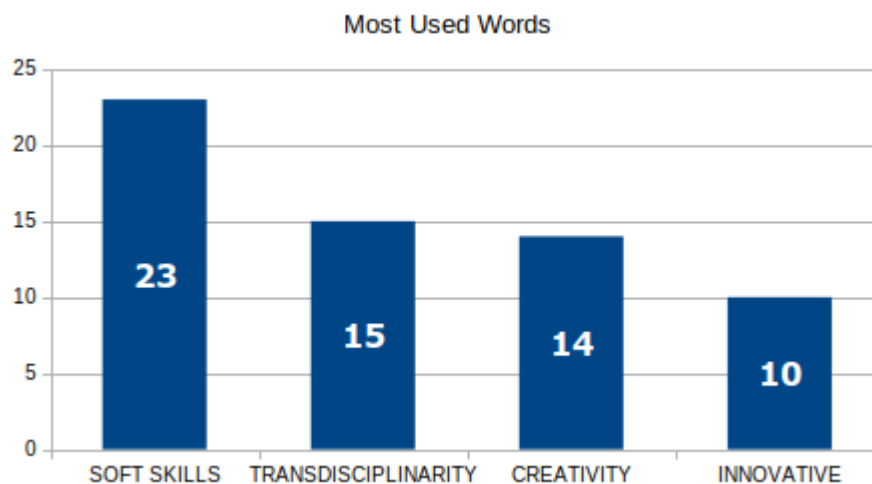
The train-the-trainer events took place in December 2024 and January 2025 in the different countries of the project partners.

In order to check the level of satisfaction of the participants, a simple 4-question survey was carried out at the end of the training.

This survey asked the participants how satisfied they were with the training, whether they would be interested in further developing their transversal competences and what they considered to be the three most important keywords of the event.

- Indicate the most important keywords of the event:

As can be seen in the graph, soft skills was the most frequently mentioned keyword, which was somewhat expected. Other important keywords would be transdisciplinarity, creativity and innovation, which also clearly reflected the relevance of soft and transversal skills in the events.



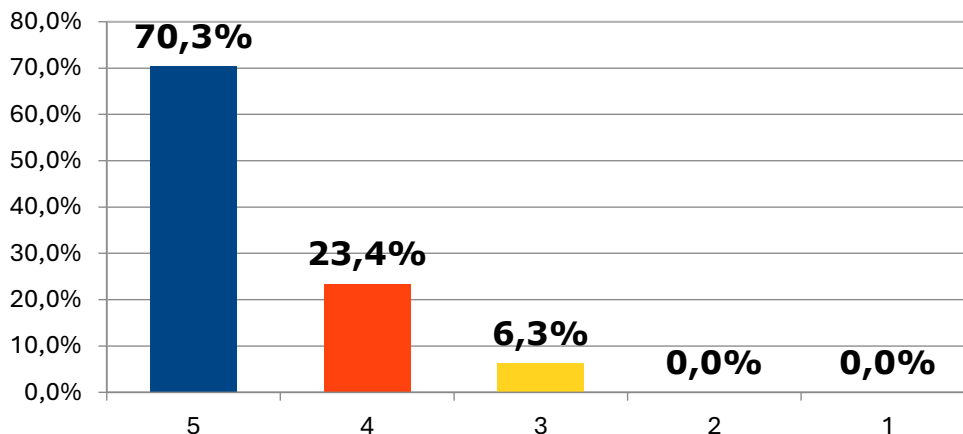
18

<sup>18</sup> Training keywords

- Rate your degree of satisfaction with the event (from 1, not satisfied, to 5, very satisfied)

The vast majority of participants were clearly satisfied with the events, with over 90% rating them 4 or 5.

Degree of Satisfaction

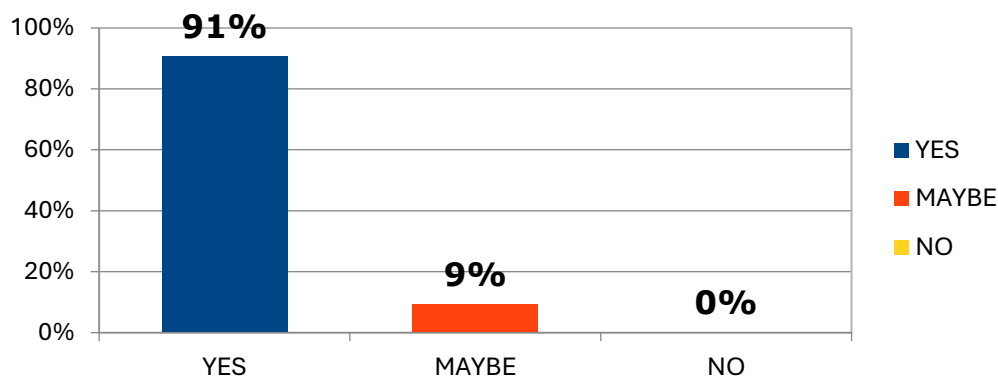


19

- Did the event arouse your interest in the subject? Would you be interested in further developing transversal competences?

Again, the results were very positive, with 91% expressing an interest and willingness to further develop their knowledge on the subject. Among the comments recorded, the vast majority expressed a desire to continue with similar projects and experiences, with some also expressing a desire to develop practical tools and see how they could be applied in the classroom, or highlighting their interest and need in light of the current labour market situation.

Interested in the Topic



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<sup>19</sup> Degree of satisfaction

<sup>20</sup> Interest in the topic and further developing of competences

- To finish, the participants were asked to express their suggestions regarding the organisation of the event.

Of course, all the answers were different, but we were able to find some similarities and commonalities.

Some of the more notable ones point out that it was an exceptional opportunity for discussion, or that this type of activity should be done more often.

Some of the less positive comments were about the lack of time to develop the projects.

## General conclusion

It is difficult to draw general conclusions about the satisfaction of participants in the different training activities because, despite similar themes and approaches, their nature was very different.

Nevertheless, some general conclusions can be drawn from the responses and comments of the respondents.

Firstly, the positive aspects predominate: the training is rated as excellent, as is the quality of the materials, resources and experts who delivered the different sessions.

Secondly, the usefulness of what was learnt and its more than likely future impact on their teaching practice is also evident, as participants believe that they will try to put what they have learnt into practice, and also that their perception of the STEAM approach has changed significantly, as well as the possibility of implementing it. This ensures the relevance of the learning.

On the other hand, some of the least appreciated difficulties and issues for teachers relate to the duration of the events, which in some cases is considered too short.

Some of the other difficulties could be the lack of motivation of the students, the difficulty of implementing the STEAM approach and integrating it into the daily educational routine, the lack of resources and the difficulty of integrating it into the curriculum requirements.