



Task O3-A3

REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE



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Centro Tecnológico
del mármol, piedra y materiales



National
Technical
University of
Athens





INTRODUCTION

Open Educational Resources (OER) refers to digital teaching, learning and research materials that allow for their use, adaptation, and redistribution by others without restriction or with limited restrictions. The OER phenomenon is of great importance and interest in the future of teaching and education, both in vocational training and university settings.

For this reason, it has been necessary to develop a fully accessible online platform to host all the results and materials produced in the project at the service of society and stakeholders.

The partners have tested the 3D animations among students/workers following courses related to the topic of the project. To obtain a reliable result, the test was conducted among groups of more than 10 people who had the possibility to undergo a short training prior to the testing of the 3D scenarios, in order to have some basic notions on nanomaterials needed.

In these courses, participants and teachers in attendance were able to use the virtual reality glasses and try out the 3D scenarios.

Below is the report of the courses and the results obtained.

The report and all the information about the project are available in the following url:

- NanoSafe project web: <https://www.nanosafeproject.eu/>



Contents

1. PILOT COURSES	4
1.1. PILOT COURSE IN DÜSSELDORF	5
1.1.1. General presentation	5
1.1.2. Presentation on nanoproducts	5
1.1.3. Presentation and test of 3D scenarios	6
1.2. PILOT COURSE IN PADOVA.....	8
1.2.1. Welcome participants	9
1.2.2. General presentation of the project	10
1.2.3. Presentation on nanomaterials.....	11
1.2.4. Practice tests with virtual reality.....	13
2. QUALITY ASSESMENT	17
2.1. Evaluation questionnaire	17
2.2. Results of the questionnaire.	26
2.3. Conclusions	30



Figure 1. Pilot Course in Düsseldorf.	5
Figure 2. Participants in the pilot course.	6
Figure 3. Testing of the 3D scenarios by the students.	7
Figure 4. NanoSafe pilot course agenda.....	8
Figure 5. NanoSafe roll-up.....	9
Figure 6. NanoSafe brochure.....	10
Figure 7. Pilot course in Padova.	11
Figure 8. Presentation on nanoproducts.....	12
Figure 9. Slide of the presentation on nanoproducts.	13
Figure 10. Showing the 3D scenarios.	14
Figure 11. Teacher testing the 3D scenarios.	15
Figure 11. Student testing the 3D scenarios.	16

1. PILOT COURSES

Two pilot courses of the NanoSafe project were held in Düsseldorf (Germany) and Padua (Italy).

In total, 31 participants attended, who had the opportunity to learn a little more about the nanotechnology present in the stone sector and its associated risks and were able to interact with the virtual reality scenarios to test the knowledge acquired and continue learning in a fun way.

1.1. PILOT COURSE IN DÜSSELDORF

The first of the courses took place in Düsseldorf on 12 October 2022, at the facilities of Bildungszentren des Baugewerbes e.V. (BZB). This course was attended by 18 people whose studies/work were related to the project's theme, as well as by BZB teachers.

1.1.1. General presentation

Thomas Murauer, Director of BZB welcomed the participants to the course. After this, together with Frank Bertelmann and Bernhard Linkwitz, they explained the aim of the NanoSafe pilot course.

1.1.2. Presentation on nanoproducts

The course began with a presentation by Juana Llorente (CTM) on nanoproducts that would allow attendees to have the necessary knowledge to later interact with 3D scenarios. The complete presentation used in both courses is available in "ANNEX I. Presentation on nanoproducts".



Figure 1. Pilot Course in Düsseldorf.

This presentation introduced the attendees to the nanotechnology present in the stone sector, its associated risks and both individual and collective prevention measures.

1.1.3. Presentation and test of 3D scenarios

After this, Carlos Martínez (CTM) showed some of the 3D scenarios developed in the NanoSafe project. Using two of the scenarios, he showed the attendees how to use and control the virtual reality glasses so that they could then use them in the other scenarios.



Figure 2. Participants in the pilot course.

Several attendees made use of the virtual reality goggles and were able to recreate situations they would face in the future.



TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.



Figure 3. Testing of the 3D scenarios by the students.



1.2. PILOT COURSE IN PADOVA

The other course was held in Padova on 20 October 2022, at the premises of SCUOLA EDILE - CPT Centro per la formazione e la sicurezza edile di Padova. This course was attended by 13 participants from outside the consortium and several teachers from the Scuola Edile.

The agenda can be found below:



Agenda

NanoSafe project
Meeting learning Virtual reality
Scuola Edile Padova - CPT
October 20th, 2022

15,00 - 15,15	Welcome participants
15,15 - 15,45	General presentation of the project by Mr Andrea Pagnacco, Director of SCUOLA EDILE PADOVA
15,45- 17,00	Presentation of nanomaterials by Mrs Juana Esperanza Llorente Garcia from CTM.
17,00 - 18,00	Practice tests with virtual reality device by Mr Carlos Martinez Gonzalez from CTM.
18,00	Pre-dinner drinks



Consortium members: Deutscher Naturwerkstein-Verband e.V. (DNV), Bildungszentren des Baugewerbes e.V, Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM), Scuola Edile CPT- Centro per la Formazione e la Sicurezza Edile di Padova, National Technical University of Athens (NTUA), Delta Materials and Innovation Solutions

Figure 4. NanoSafe pilot course agenda.

1.2.1. Welcome participants

Andrea Pagnaco, together with Alessia Ranci, welcomed all those attending the course.

Scuola Edile partners made dissemination material for the NanoSafe project, as can be seen below.



Figure 5. NanoSafe roll-up.



Figure 6. NanoSafe brochure.

1.2.2. General presentation of the project

After welcoming the attendees, Andrea Pagnaco as director of the Scuola Edile Padova presented the NanoSafe project to the audience. Mr. Pagnaco spoke about the main objectives of the project, the needs it aims to meet and showed some of the results already completed.



Figure 7. Pilot course in Padova.

1.2.3. Presentation on nanomaterials

Juana Esperanza Llorente, a chemist from the Marble Technology Centre, then gave a presentation on the basics of nanomaterials in the natural stone sector. The aim of this intervention was to provide the attendees with knowledge on the following topics:

- Basic concepts of nanotechnology.
- Nanotechnology in the construction sector.
- Nanotechnology in the stone sector.
- Application of nanoproducts.
- Risks associated with the manufacture, use and disposal of nanomaterials.



TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.



Figure 8. Presentation on nanoproducts.

5. Associated risks

Protective equipment for the mucous membranes of the eyes:

- Safety goggles: universal frame laboratory goggles
- Safety goggles: "diving" type, tightfitting eye protection held in place by a rubber band around the head.
- Face shields: extending from the eyebrows to under the chin and across the full width of the employee's head.



Figure 9. Slide of the presentation on nanoproducs.

1.2.4. Practice tests with virtual reality

Once the attendees had the necessary notions about nanomaterials, Carlos Martínez, a computer engineer from CTM, showed the 3D scenarios developed for the project and demonstrated how to use the virtual reality glasses so that the course attendees could use them afterwards.

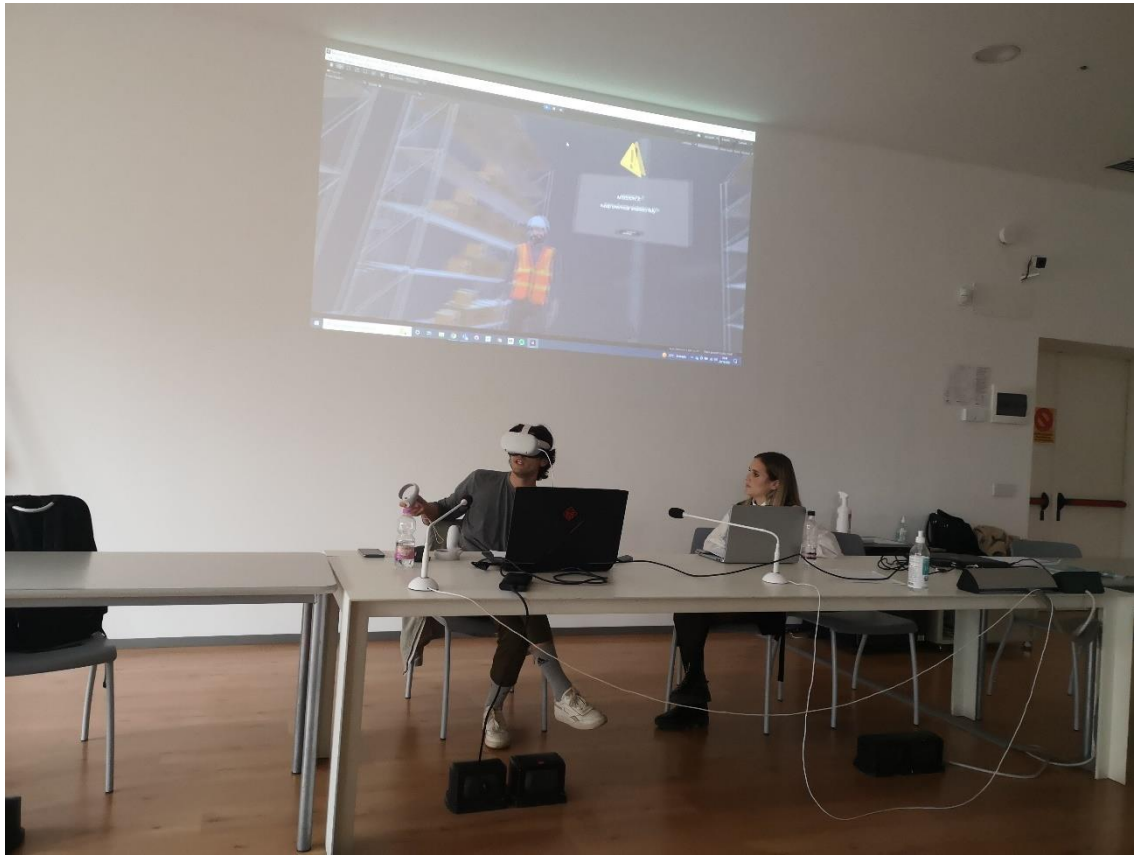


Figure 10. Showing the 3D scenarios.

Below, you can see some of the attendees trying out the scenarios:

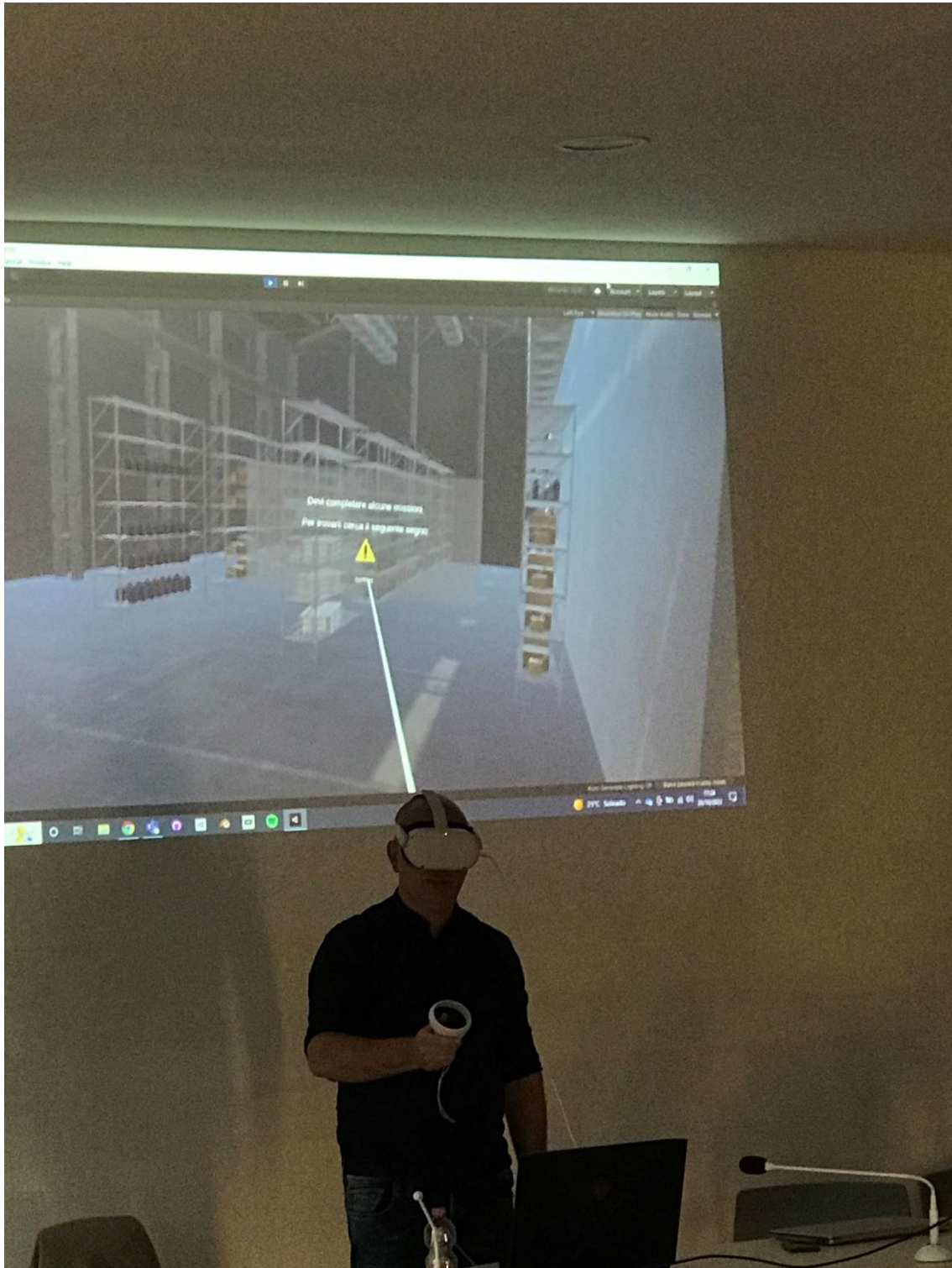


Figure 11. Teacher testing the 3D scenarios.



Figure 12. Student testing the 3D scenarios.



2. QUALITY ASSESMENT

Once the pilot courses were completed, the consortium sent an evaluation questionnaire to the participants (students). This is the link to the questionnaire sent to the course participants: https://docs.google.com/forms/d/e/1FAIpQLSeZMnRNzzlZbNbTT0RMc5nfovaOwG-V7sH-_MWWJeilTre31Q/viewform

2.1. Evaluation questionnaire

Screenshots of the questionnaire in question are shown below:

Feedback questionnaire of NanoSafe Pilot Courses

IMPROVING TECHNIFICATION, SAFE PRODUCTION AND USE OF NANOMATERIALS IN STONE SECTOR

Reference: 2020-1-DE02-KA202-007674

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*Obligatorio

Questionnaire supplied by: *

Bildungszentren des Baugewerbes e.V. (BZB).

Scuola Edile CPT- Centro per la Formazione e la Sicurezza Edile di Padova.

1. Overall, how satisfied were you with the training activity? *

	1	2	3	4	5	
Not satisfied at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied



TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

2. To what extent do you agree or disagree with the following statements? *

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Training activity's contents were of my interest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel now better informed on various aspects related to safe production and use of nanomaterials in stone sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I now better understand the benefits of the NanoSafe approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have broaden my knowledge, competences and skills regarding nanomaterials in stone sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



3. To what extent did the training activity show the following attributes? *

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Contents were clearly understandable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contents were interesting and motivating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training activity was well-organized and well-structured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall atmosphere was pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

4. Do you have any further comments and recommendations on the training activity? What could have been done better? *

	1	2	3	4	5
The organisation and coordination of the training activity functioned: (1: Inefficiently 5 Efficiently)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The information you received before the training activity, intended to facilitate your participation was (1: Incomplete 5: Exhaustive)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organization of the facilities used for the training activity were (1: Not suitable 5: Suitable)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How was the available technical equipment during the training activity? (1: Not suitable 5: Suitable)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

The agenda of the training activity was (1: Unclear 5: Useful)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The material distributed during the training activity was (1: Not useful 5: useful)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How the training activity was delivered to you (1: bad 5: good)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the start of the training activity, the themes, the time available and the procedures were: (1: not clear 5: clear)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The time management of the training activity was: (1: inadequate 5: adequate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The working conditions for the training activity were: (1: unsatisfactory 5: satisfactory)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



TASK O3/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

The working atmosphere of the training activity was: (1: unsatisfactory 5: satisfactory)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The general management of the training activity was: (1: unsatisfactory 5: satisfactory)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The management of the development of the work in the training activity was: (1: unsatisfactory 5: satisfactory)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The level of participation of the different components of the partners' group was: (1: unsatisfactory 5: satisfactory)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did your questions receive satisfactory answers? (1: never 5: always)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The amount of time available for the training activity was: (1: insufficient 5: appropriate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



TASK O3/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

The level of correspondence of the results of the training activity with the established objectives was:
(1: inadequate 5: adequate)



5. About training team: *

	Fully disagree	Rather disagree	Neither disagree nor agree	Rather agree	Fully agree
Has extensive knowledge of the course content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transmission capacity and clarity of exposure are ideal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivates and arouses interest in the subject matter.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourages and facilitates the intervention of the attendees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is able to respond appropriately to the questions posed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Please, if you have any suggestion, tell us what kind of improvement we could implement: *

Tu respuesta _____



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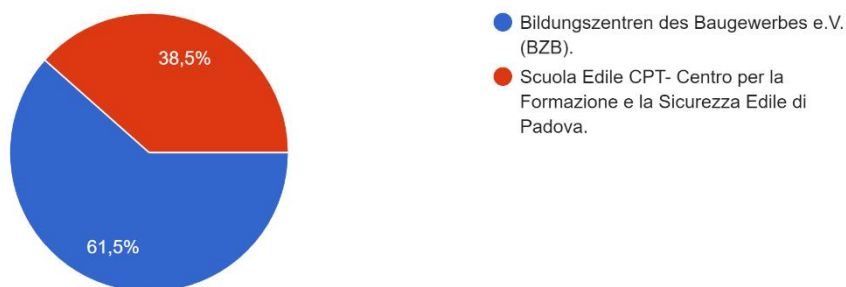


2.2. Results of the questionnaire.

These were the results obtained:

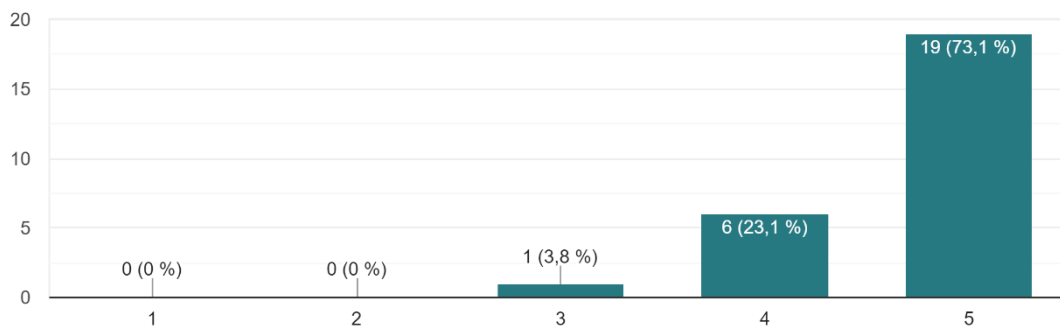
Questionnaire supplied by:

26 respuestas



1. Overall, how satisfied were you with the training activity?

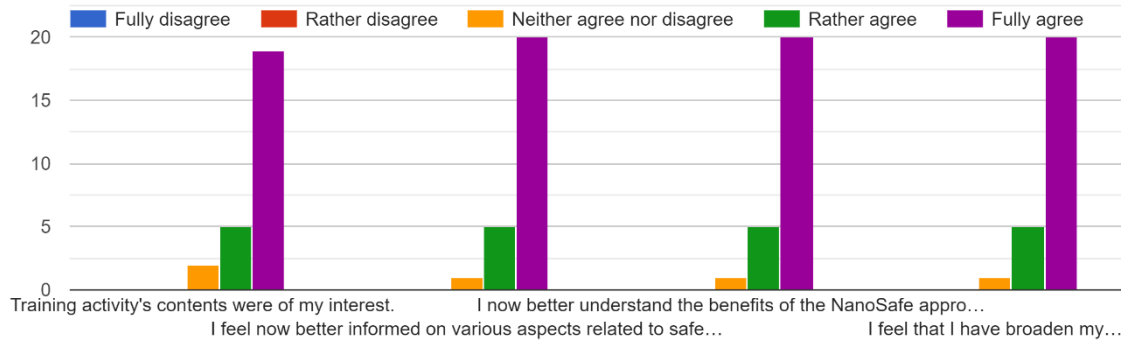
26 respuestas



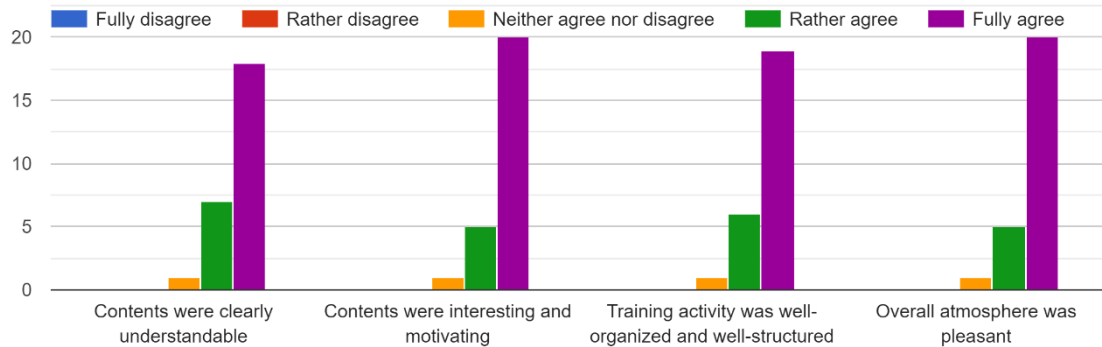


TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

2. To what extent do you agree or disagree with the following statements?



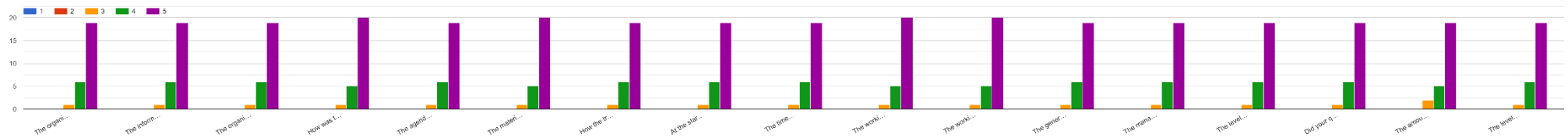
3. To what extent did the training activity show the following attributes?



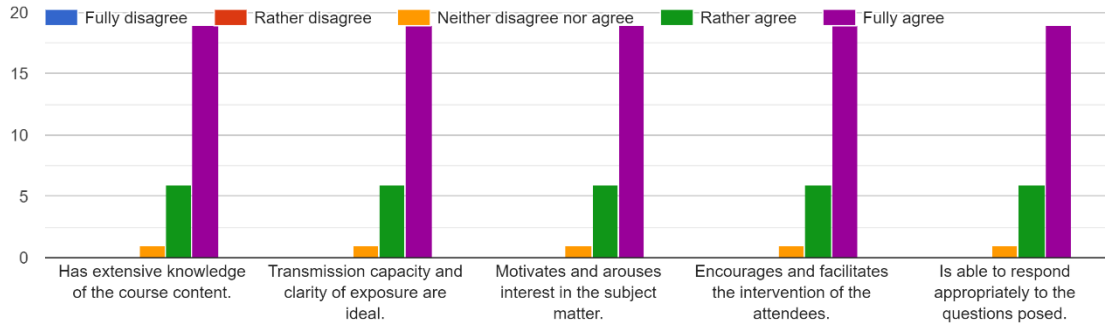


TASK 03/A3. REPORT ON EDUCATIONAL QUALITY ASSESSMENT OF THE PILOT COURSE.

4. Do you have any further comments and recommendations on the training activity? What could have been done better?

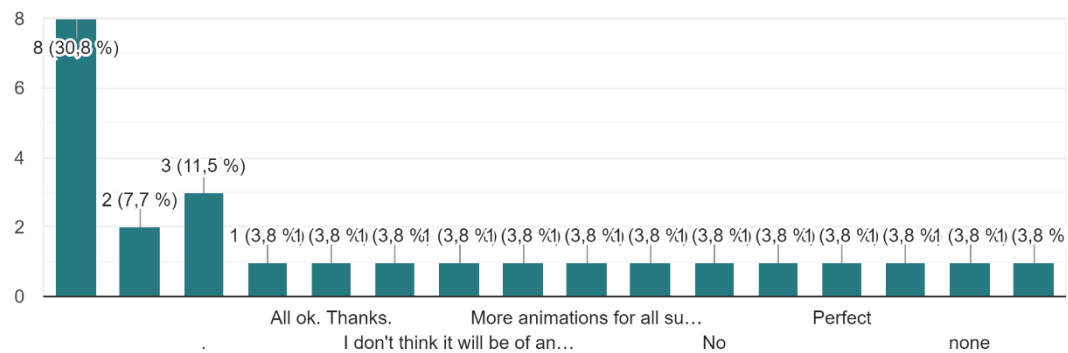


5. About training team:



6. Please, if you have any suggestion, tell us what kind of improvement we could implement:

26 respuestas



2.3. Conclusions

Twenty-six of the thirty-one total participants responded to the survey, representing an 83.9% participation rate.

The students who responded to the surveys of the pilot courses generally rated the course positively, except for one of the respondents who always answered all the questions with an intermediate rating, so we understand that, in this case, the course was not of interest to him.

Leaving this aside and focusing on the rest of the responses, the students were satisfied with the pilot course, and it has served to improve their knowledge of nanomaterials and their associated risks and prevention measures.

Generally, they consider that the course is well structured, with a good atmosphere, interesting and clear contents that help their training, together with the training team, which they also evaluate positively.

As suggestions, except for the student who thinks that it will not be useful in the future, to whom the answers are associated, always evaluated in an intermediate way, the users think that the course is good, one of them suggesting the implementation of the 3D animation learning system for all subjects.

In addition to the evaluation of the pilot courses by the students, after the end of the pilot courses, the teachers of BZB (3) and Scuola Edile Padova (5) also wanted to share their opinion regarding the course. Some of the teachers said that they would use these 3D scenarios in their classes in the future and the students showed their interest in this type of learning. Some suggestions, such as the lack of protection for the windowpanes in one of the scenarios or the adaptation of the texts to make them easier to read, were considered and these small errors in the scenarios were corrected for future use.