



PYTHAGORAS Learning activity Report

Teaching and learning mathematics

Summer School for Students

21st – 25th of October 2024

Superior Institute of Engineering of Porto, Portugal

This report aims to present the findings and analyze the level of satisfaction expressed by the participants which attended the **Summer School for students**, organized by the **Polytechnical Institute of Porto between the 21st and 25th of October 2024**.

This educational activity was tailored for math and engineering students from the higher education institutions within the consortium participating in this project. The sessions were facilitated collaboratively by specialists from the project's partner organizations. It's worth noting that the event was attended by 24 students from Spain (ULL - University of La Laguna), Romania (ULBS - Lucian Blaga University from Sibiu), Slovakia (STUBA - The Slovak Technical University from Bratislava), Sweden (KAU - Karlstads University), and Greece (Hellenic Mediterranean University). However, there were no participants from Porto, despite ISEP (Instituto Superior de Engenharia do Porto) being the host, and Aalborg University's students (AAU) were also absent due to last-minute cancellations.

The goal of this one week learning activity was to present and test with the students some of the deliverables developed in the Pythagoras project, getting feedback and improving the materials.

The five day activity had the following agenda:

Day 1 (21 October 2024):

10:00-10:30: Welcome and icebreakers

10:30-11:00: Presentations, team building and group work dynamics

11:00-11:30: Coffee Break

11:30-12:30: Session #1: Digital Escape Room Experience, ISEP, P.Porto, Portugal

12:30-14:30: Lunch break

14:30-16:30: Session #1: Digital Escape Room Experience, ISEP, P.Porto, Portugal



16:30-17:00: Q&A session

Day 2 (22 October 2024):

10:00-11:00: Session #2: Mini-PBL, ULL, La Laguna, Tenerife

11:00-11:30: Coffee Break

11:30-12:30: Session #2: Mini-PBL, ULL, La Laguna, Tenerife, Spain

12:30-14:30: Lunch break

14:30- 16:30: Session #2: Mini-PBL, STU, Slovakia

16:30- 17:00: Q&A session

Day 3 (23 October 2024):

10:00-11:00: Session #3: eduScrum, Willy Wijnands, Netherlands

11:00-11:30: Coffee Break

11:30-12:30: Session #3: eduScrum: applications, STU, Slovakia

12:30-14:30: Lunch break

14:30- 16:30: Session #4: show and discuss the Pre-Calculus course, HMU, Greece

16:30- 17:00: Q&A session

Day4 (24 October 2024):

10:00- 11:00: Session #5- Gamification, AAU, Denmark

11:00-11:30: Coffee Break

11:30-12:30: Session #5- Gamification, AAU, Denmark

12:30-14:30: Lunch break

14:30- 15:30: Session #5- Gamification, AAU, Denmark

15:30- 16:00: Q&A session

Day5 (25 October 2024):



10:00-11:00: Session #6- Stack, KAU, Sweden & SIBIU, Romania

11:00-11:30: Coffee Break

11:30-12:30: Session #6- Stack, KAU, Sweden & SIBIU, Romania

12:30-13:00 Final remarks, evaluation and Q&A

Methodology:

Several satisfaction surveys were conducted during the event: one at the end of each day for the students to provide feedback on the materials presented which will be used by the partners in improving the project's deliverables and a comprehensive satisfaction survey to assess the overall week-long event. Additionally, a similar final questionnaire was administered to the speakers participating in the learning activities to gauge their satisfaction with the learning mobility experience.

Findings:

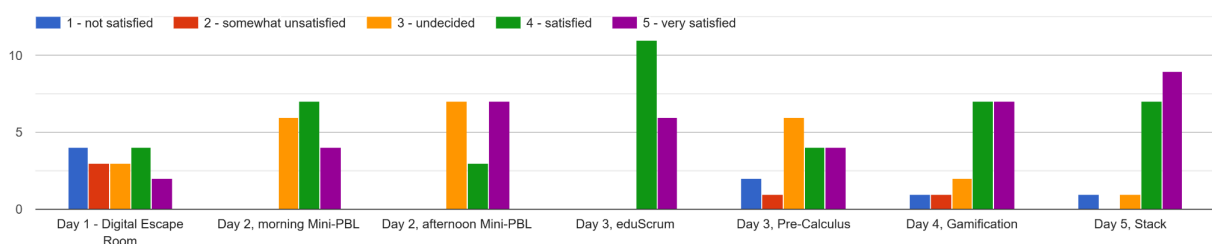
Student's experience

When evaluating content and overall satisfaction, the general survey administered to students indicated that they were **generally pleased with the event**. Notably, they expressed a **high level of satisfaction with the session led by STUBA**, which focused on **eduScrum**. Conversely, the students reported the least satisfaction with the **first day** of the Digital Escape Room, facilitated by ISEP. This dissatisfaction stemmed from design issues within the escape room application, which hindered its effective execution. Students articulated these concerns in their feedback, highlighting the technical challenges they encountered and how these problems detracted from their overall experience during that particular session.

The Escape room didn't have a way to escape :(

The first day's virtual escape room failed when it came to not crashing, not bugging, and enunciating the problems correctly. Otherwise, it would have been very interesting.

Overall satisfaction with the following session you attended

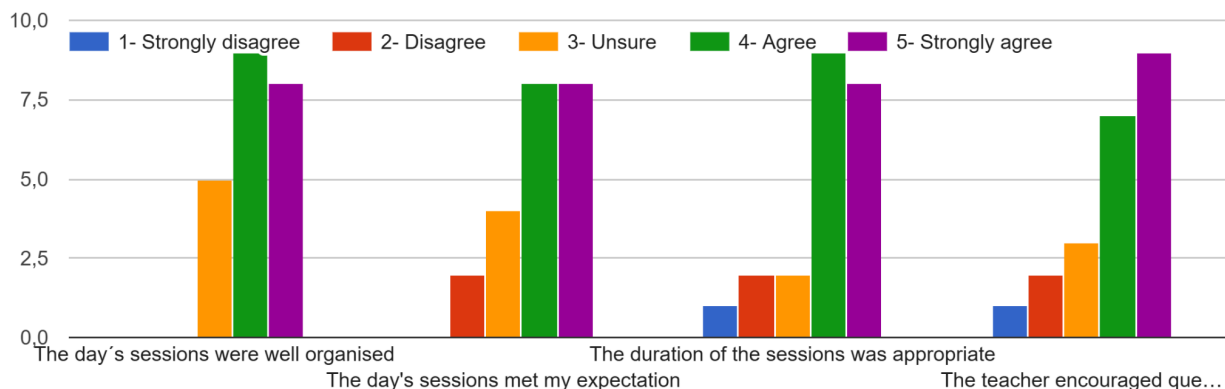




In evaluating **Day 2** of the event, which featured morning sessions led by the ULL team and afternoon sessions facilitated by STUBA, the feedback from students was overwhelmingly positive. A significant majority of participants reported that the sessions were well organized, with 77.27% agreeing or strongly agreeing on this point. Additionally, 72.72% of students felt that the sessions met their expectations, reflecting a high level of satisfaction with the content delivered.

Moreover, a substantial portion of the respondents also indicated that the duration of the sessions was appropriate, with 77.27% expressing agreement on this aspect as well. Furthermore, 72.72% of the students acknowledged that the instructors effectively encouraged questions and fostered discussions during the sessions. This engagement is crucial for deepening understanding and enhancing the overall learning experience, suggesting that both the ULL and STUBA teams successfully facilitated an environment conducive to active participation and dialogue among students.

Do you consider that...



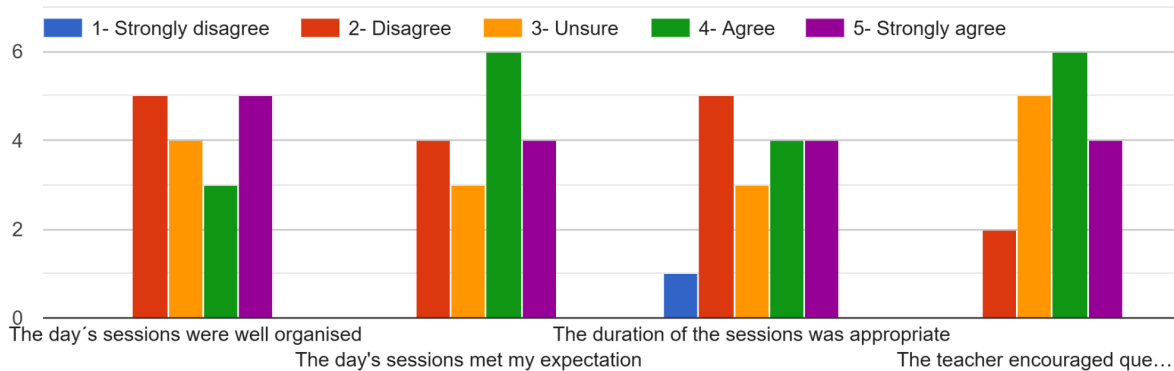
On **Day 3** of the event, the morning sessions of EduScrum, facilitated by STUBA, were highly regarded and considered the highlight of the week. However, the overall evaluation of the day was adversely affected by the cancellation of the second morning session due to logistical challenges, which made it impossible to establish a proper online connection with the guest speaker. Additionally, the feedback on the afternoon session led by the HMU team was less favorable.

In terms of overall satisfaction, less than half of the students who responded to the questionnaire felt that the day's sessions were well organized and that the duration was appropriate, with only 47.05% agreeing or strongly agreeing with this statement. Furthermore, just 58.82% of participants felt that the sessions met their expectations and that the teachers effectively encouraged engagement. One student commented



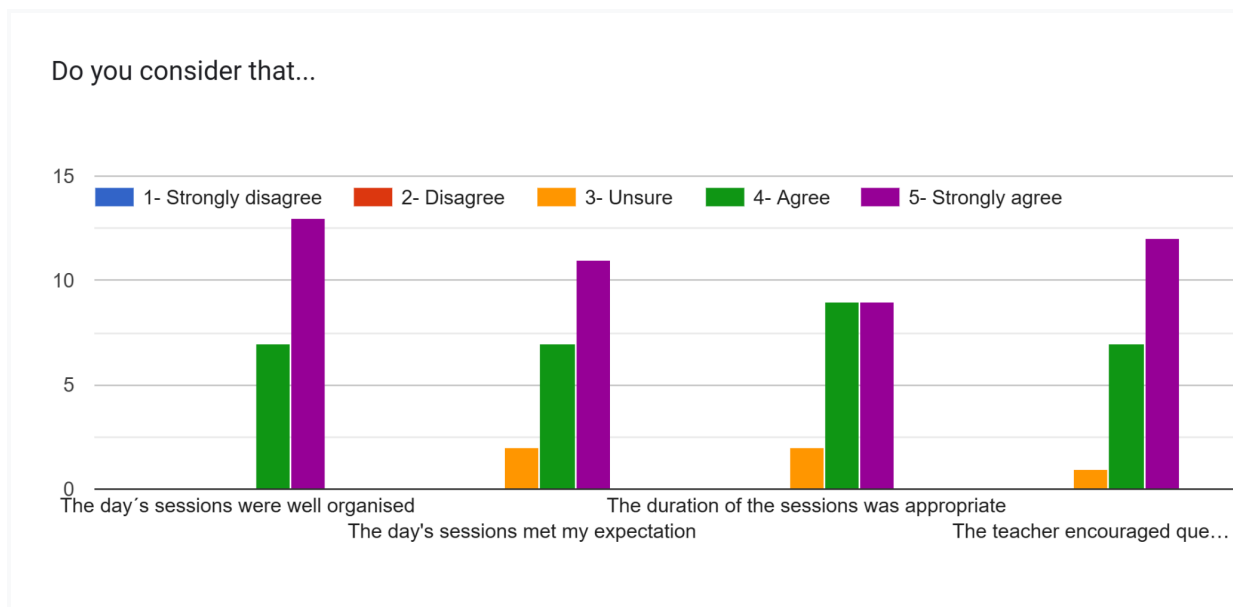
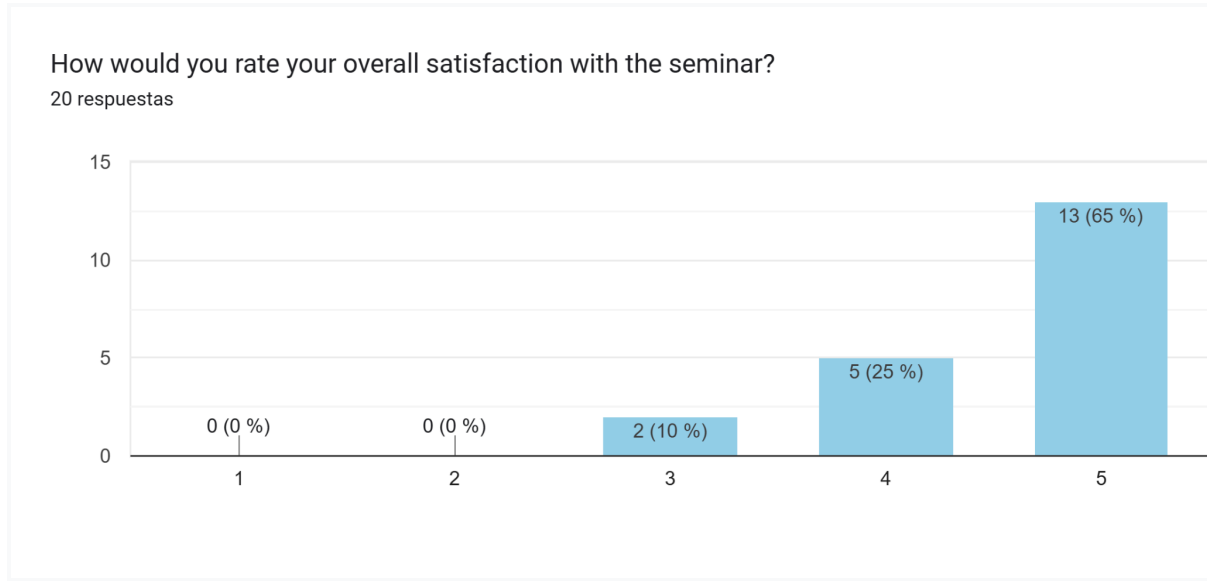
particularly on the inconsistency in teaching approaches during the afternoon session, stating, "If one teacher tells us that teachers shouldn't teach while facing the board, then why does the next teacher do that?" This highlights a perceived contradiction in teaching methods and suggests that greater consistency might enhance student engagement.

Do you consider that...



There appears to be a slight discrepancy in the feedback regarding the gamification sessions from **Day 4** led by AAU. While 77.77% of participants reported being satisfied or very satisfied with these specific sessions, this sentiment does not align with the overall evaluation of the day's events. By the end of Day 4, an impressive 90% of students expressed satisfaction or complete satisfaction with the seminar as a whole.

Additionally, all students confirmed that the sessions were well organized, and nearly all participants (90%) agreed that the sessions met their expectations and that the duration was appropriate. Furthermore, an outstanding 95% of the group commended the teacher for his proactive attitude in encouraging questions and facilitating discussions. Many students shared positive remarks, highlighting the effectiveness of the sessions with comments such as, "Very interesting topic, excellent presentation, engaging activities, and fun examples," and "The interaction with students and competitive games really encouraged teamwork." This feedback underscores the overall success of the seminar, despite the initial mixed feelings about the gamification component.



The evaluation of the final session from **day 5** of the summer school yielded highly positive results, with 90% of students expressing satisfaction or extreme satisfaction with the STACK session, which was co-facilitated by the project's coordinator from ULBS and representatives from the Swedish partner, KAU. A significant majority of participants (90%) affirmed that the session met their expectations, highlighting its effectiveness in delivering the intended content.

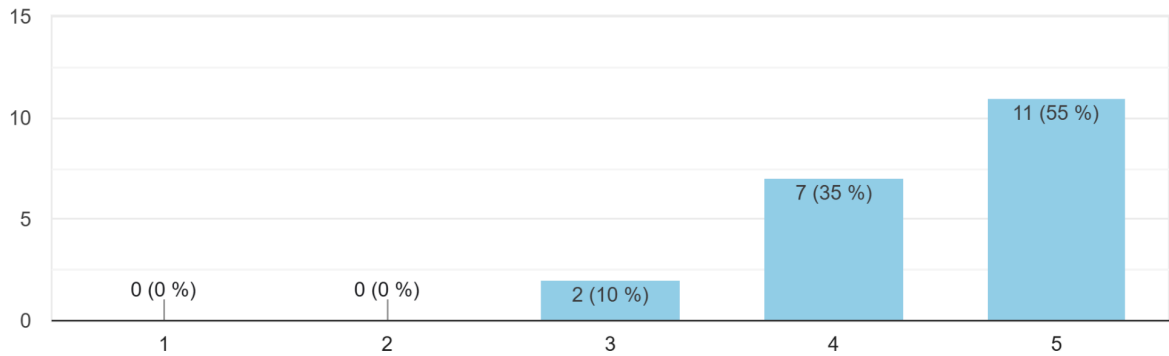
Moreover, an impressive 95% of attendees agreed or strongly agreed that the session was well organized and that the length of the activity was appropriate, indicating careful planning and execution. Furthermore, 85% of participants recognized the lead teachers' efforts in fostering an environment



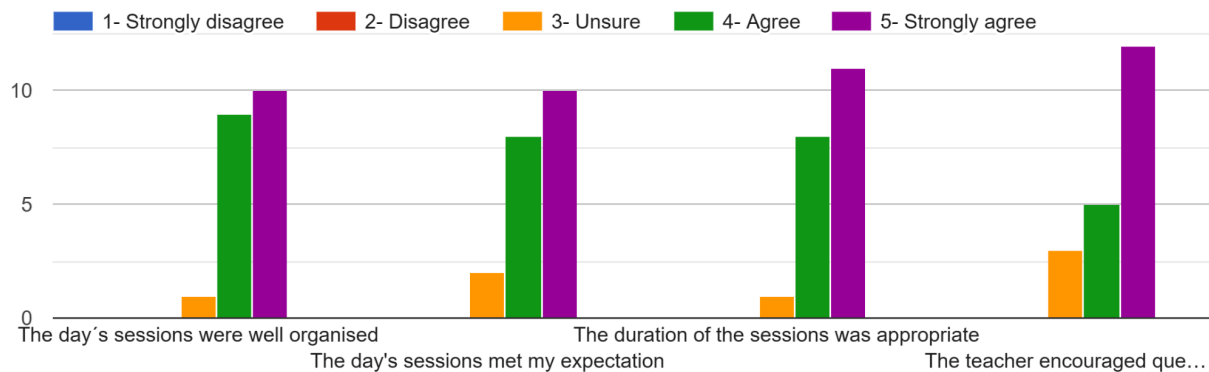
conducive to active participation. This feedback reflects a strong endorsement of the instructors' ability to engage students effectively and facilitate interaction throughout the session. Overall, the positive evaluations suggest that the final session was a fitting conclusion to the summer school experience.

How would you rate your overall satisfaction with the session?

20 respuestas



Do you consider that...



Regarding other aspects we evaluated about the learning event the majority of students identified **group work as the most significant aspect of their experience**. They particularly valued the opportunity for collaboration and teamwork. Additionally, they **highlighted the trip itself as a key feature**, as it allowed them to meet and exchange knowledge with individuals from diverse countries. This intercultural



interaction enriched their learning experience and fostered a sense of global community among the participants.

Meeting other people and working in groups

The standout moment of the experience was that I had to collaborate with students from another countries

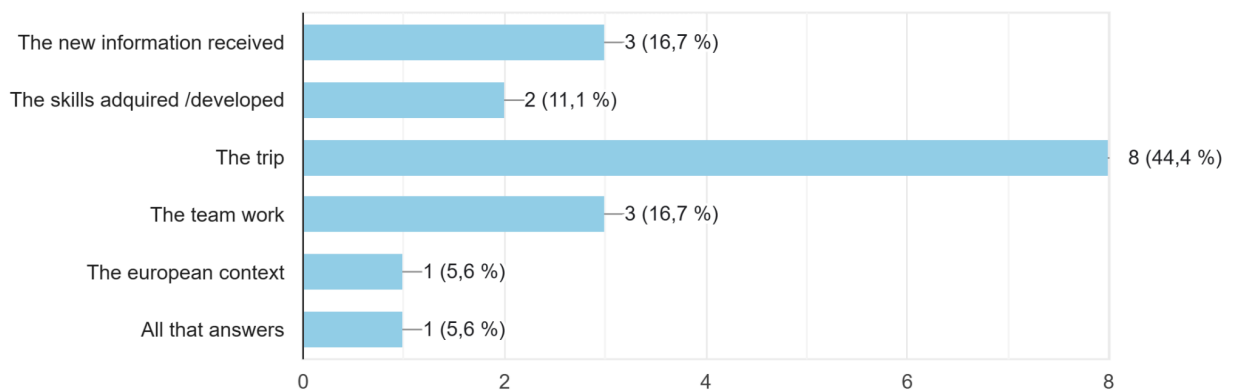
Highlights - working together, being able to get to meet other people

Working in groups, meeting new people and share knowledge with people from different countries

Meeting other students and seeing different viewpoints. Teamwork and collaboration with people who study in different subjects than mine

What aspects of the experience did you enjoy the most?

18 respuestas



Regarding **organization and logistics**, the group generally assessed these aspects as **satisfactory**, particularly concerning the activity spaces and facilities and the event’s structure, though they provided some feedback for improvement. Most comments focused on the overall structure of the event, specifically, suggestions for enhancing the event's design and execution centered around the organization of the workshops. Many participants expressed a need for increased opportunities for team-building and ice-breaking activities, given that they were working with individuals from different countries who were unfamiliar with one another. Addressing this would foster better collaboration and rapport among the participants.

The structure might need more organisation, and we sometimes feel a lack of goal

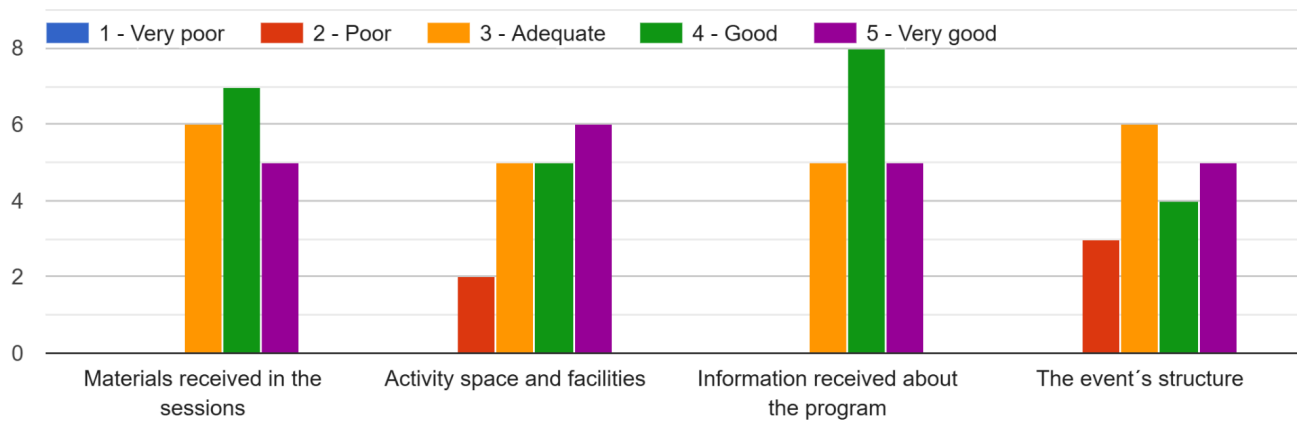
The time we had to do the workshops was bad organized sometimes.

I feel there are people that I have never met in the project, I would like to have a presentation where people introduce themselves or something similar. Another fact is some exposition have been boring, or some activities haven't had a logical progression (so fast or so slow)



The want to make groups of students from different nations should have been executed differently. If indeed they wanted us to socialise, they should have predetermined said groups so everybody would work with everybody - meet everybody. In terms of this, the session were disorganized by the organisers.

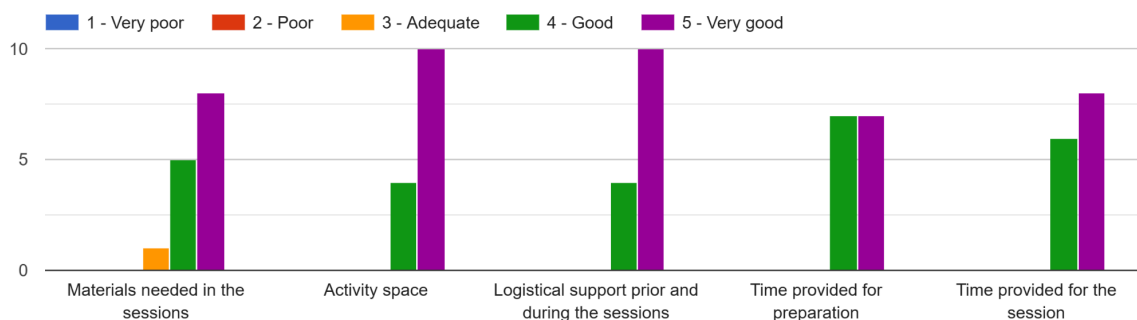
Please evaluate the organizational aspects of the event



Teacher's experience

Seventeen university teaching staff participated in the week-long event, representing seven higher education institutions involved in the project. Out of these, 14 teachers actively contributed by leading various sessions. **Overall, their satisfaction with the experience was notably positive**, largely attributed to the event being held in Porto and having all the logistical support and resources to successfully carry out the planned sessions.

Please evaluate the logistical support and resources provided





Additionally, the participants expressed **appreciation for the group of students**, whose positive demeanor and diverse backgrounds enriched the learning environment. The combination of the engaging atmosphere created by both the instructors and students played a key role in the success of the event. This positive feedback highlights the importance of collaboration and the value of diversity in educational settings, enhancing the overall experience for both educators and learners.

It was a great opportunity to test our ideas on students from all partner countries, see their enthusiastic way of approaching problems, communicating skills and creativity.

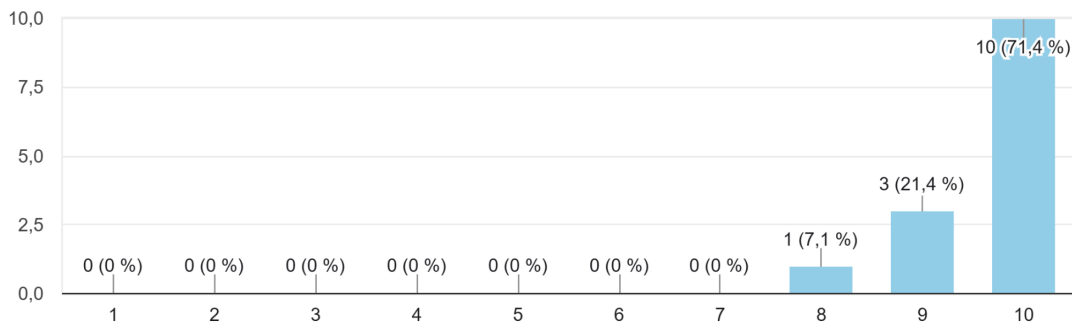
The session was interactive and the students were really interested on the lecture

Excellent materials, engaged students

Because I have to work with students from different countries

How satisfied were you with the experience on a scale of 1 to 10

14 respuestas

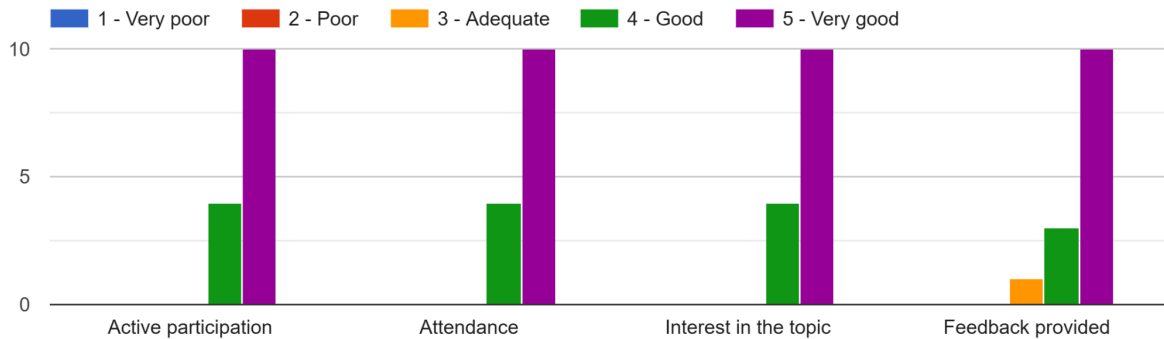


A majority of the facilitating teachers identified **the students' active participation as the most remarkable aspect of the experience**. They evaluated the overall level of engagement as ranging from very good to good, emphasizing several noteworthy features. Key elements included the students' active involvement during discussions, consistent attendance, authentic enthusiasm for the topics being explored, and the valuable feedback provided throughout the sessions.

This high degree of engagement not only showcased the students' commitment to their learning but also substantially enhanced the overall educational experience for everyone involved. The constructive contributions from the students created a dynamic interactive environment, fostering deeper discussions and enriching the learning process, ultimately benefiting both the teachers and the participants.



Please evaluate the group's participation in the sessions



In conclusion, an impressive 92.9% of the teachers expressed that the experience will significantly enhance the presentation of the materials associated with the Pythagoras project. This feedback indicates that the deliverables tested during this learning experience have met their intended objectives. The teachers' insights suggest that the practical application of these materials during the event provided valuable opportunities for refinement and improvement. As a result, they are optimistic that the overall quality and effectiveness of the project's outcomes will be notably elevated due to their participation in this activity. This affirmation underscores the relevance of hands-on experiences in the development and optimization of educational resources.

The feedback we got is very helpful.

The examples will improve the understanding of the importance of maths

To have a week with students testing the results was the best part of the project.

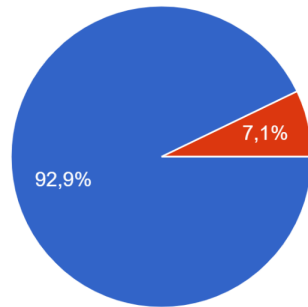
We will analyze the answers given from the students in our activities, and from those results we would see if they work in a good way.



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Do you think this experience will help improve the materials presented?

14 respuestas



● Yes
● No

Photos of the event on the [project's website](#)

