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Monitoring and evaluation plan report of the Pilot Course

"Introduction to Artificial Intelligence, Coding and Chess for Primary School'.

January 15, 2024

Introduced by
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European Union



The Project's Aim



- The pilot training course on "Artificial Intelligence, Chess and Coding" provides initial training for primary school teachers in order to develop the knowledge and methodological skills to be able to deliver 12 lessons directly in their classrooms.
- The purpose of the monitoring and evaluation plan is to assess the impact of the pilot course aimed at 4 teachers (two Italian and two Swedish) and 97 students of their classes.

The sample

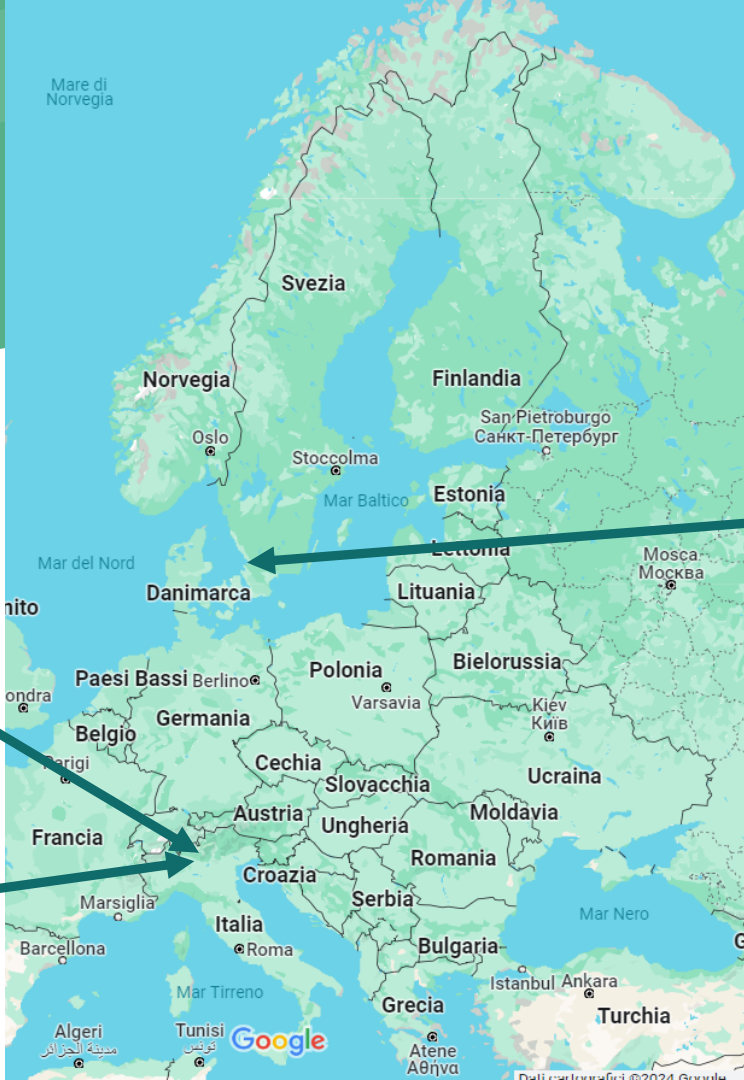
- Istituto Italiano Santa Maria Assunta in Como

- 1 teacher – 1 class
16 pupils

- Istituto Italiano Madre Annunciata Cocchetti in Milan

- 1 teacher – 1 class
22 pupils

3



- the International Engelska School in Lund.

- 2 teachers

- 1 class 32 pupils

- 1 class 32 pupils

Research method

Through a descriptive and qualitative analysis

- The sample cannot be representative but it can provide very interesting data for evaluating the teacher training course and the pilot course.
- The monitoring action is an interpretation of reality in order to understand motivations and opinions of the research sample.



How do we collect the data?



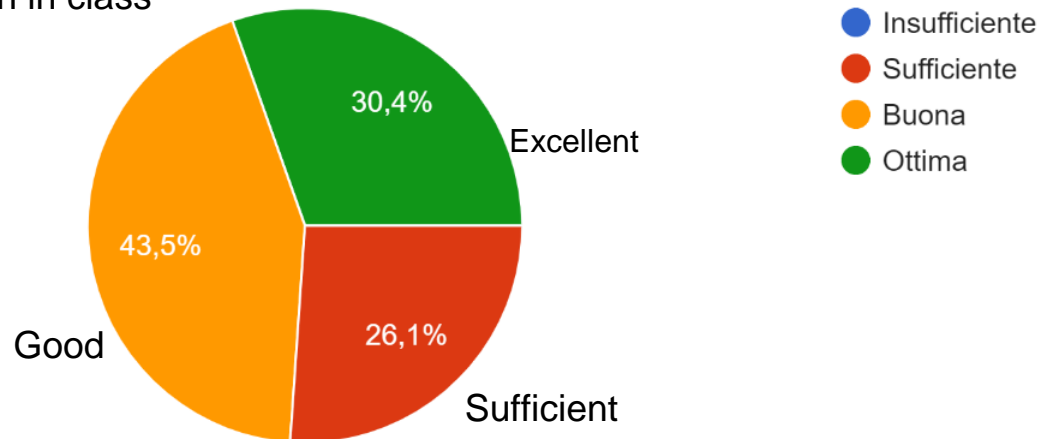
Low-structure instruments	<ul style="list-style-type: none">● Classroom observation - Teacher's logbook● Free interview with teachers
Semi-structured instruments	<ul style="list-style-type: none">● End-of-course questionnaire to teachers● Questionnaire for students

Teachers' logbook observations

The logbook was filled in after the classroom lessons

The evaluation given to the training provided to the teachers on the basis of the evaluation expressed in each individual lesson.

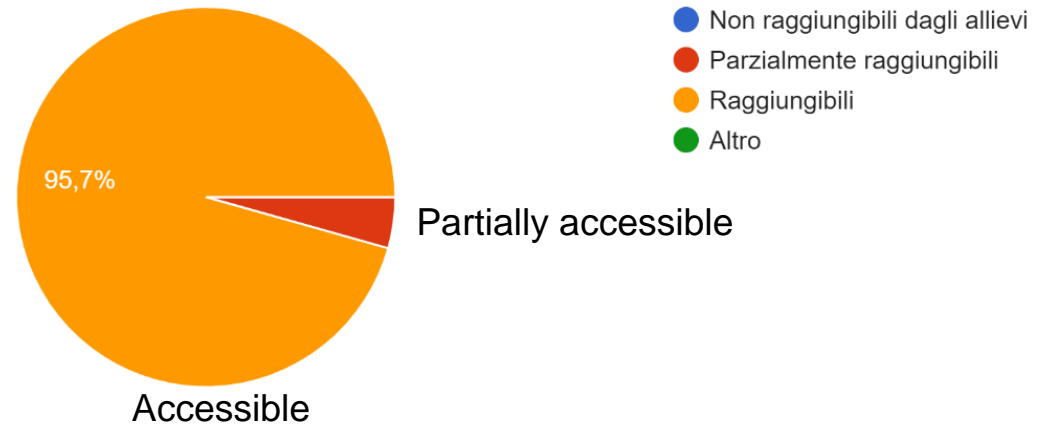
Consider the preparation provided to experience this lesson in class



Teachers' logbook observations

Consider the learning objectives of this lesson

The planned objectives were always considered by the teachers as achievable by the pupils. This is the evaluation expressed in each individual lesson



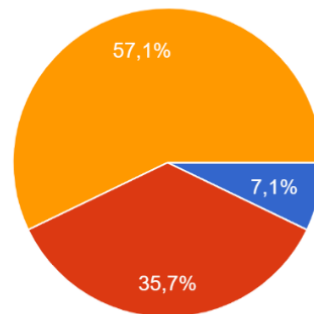
Initial knowledge Chess

In Sweden, the teachers and most of the students already knew how to play chess

1. Did you know how to play chess?

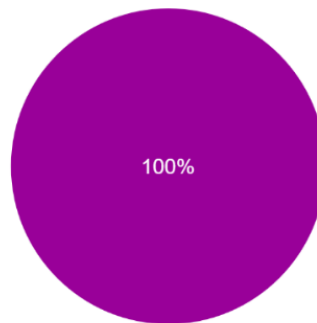
56 risposte

92,8 %



- No
- A little
- Yes, good

Before the training course
what percentage of your pupils knew how to play chess?



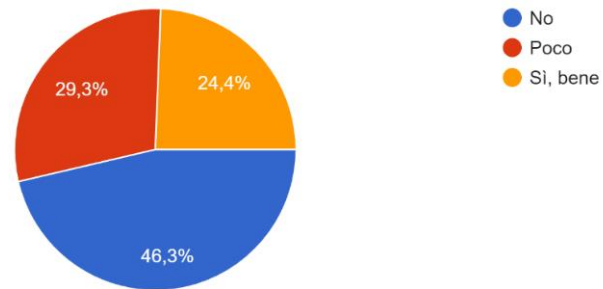
- 1. Less than 20 per cent
- 2. Between 20 and 40 per cent
- 3. Between 40 and 60 per cent
- 4. Between 60 and 80 per cent
- 5. More than 80 per cent

Initial knowledge Chess

1. Sapevi giocare a scacchi?

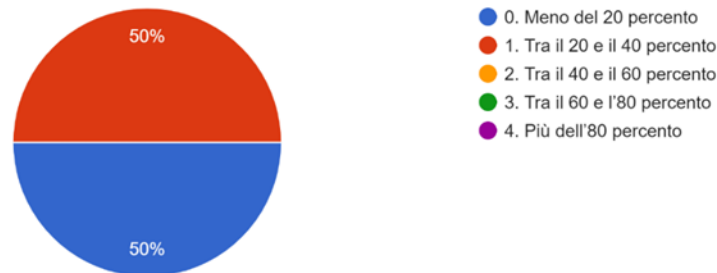
53,7 %

41 risposte



In Italy, both teachers and the vast majority of students had no knowledge of chess.

Before the training course
what percentage of your pupils knew how to play
chess?

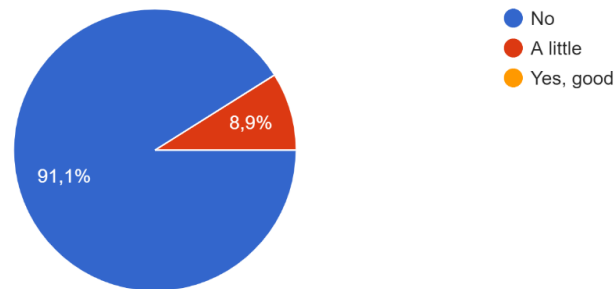


Initial knowledge Coding

- On the other hand, there is homogeneity with regard to coding (all the classes had carried out coding activities)

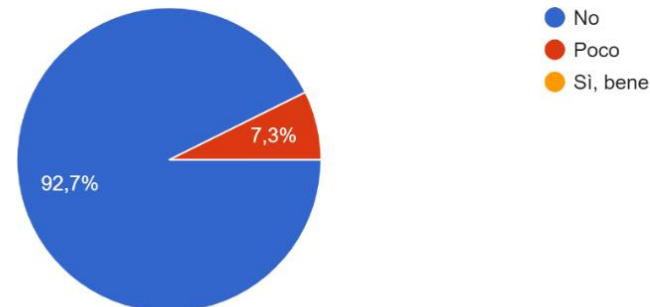
2. Did you know the SARA and KOJO programmes?

56 risposte



2. Conoscevi i programmi SARA e KOJO?

41 risposte



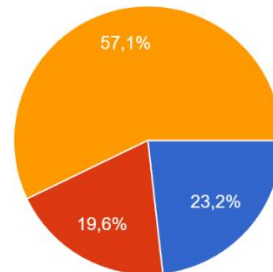
Initial knowledge AI

- Only in Sweden teachers carried out some activities related to AI

3. Did you know what CHAT GTP was?

56 risposte

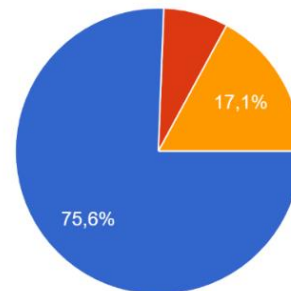
77%



3. Sapevi cosa fosse CHAT GTP?

41 risposte

7%



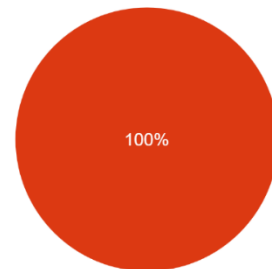
Teachers

End-of-course questionnaire

Do you intend to continue applying the methods learnt in the training even after the end of this experiment?

Do you intend to continue applying the methods learnt in the training after the end of this experiment?

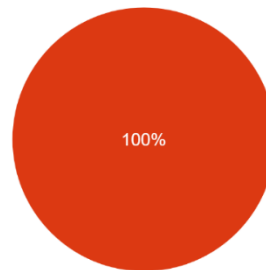
1 risposta



- 1. No
- 2. Yes

Do you intend to continue applying the methods learnt in the training after the end of this experiment?

1 risposta



- 1. No
- 2. Yes

Teachers

End-of-course questionnaire

Can you briefly describe the case of a pupil who, in your opinion, has particularly improved as a result of classroom activities?

activities?

- Many children were initially too hasty in executing moves during mini-games or games, but then became more thoughtful. One child in particular seemed less 'aggressive' and cooperative after a few lessons. She used to try to 'cheat' or be accused of doing so and slowly, even after reflecting together, she tried to cooperate and seemed more relaxed.

- Students who enjoy doing practical examples using their hands, the chess boards and pieces really helped because they can see it happening. Instead of only learning the theory of coding as an abstract idea.

Teachers

End-of-course questionnaire

Can you briefly describe the case of a pupil on whom, in your opinion, the activities carried out in class had no effect?

- For no child can I say that there was no positive impact and no acquisition of skills.
- Some children do not show particular fondness for this game, but I have not noticed anyone on whom the project has had no effect.

Teachers

End-of-course questionnaire

What improvements did you find, on average, in the learners' **KNOWLEDGE** as a result of the experiment?

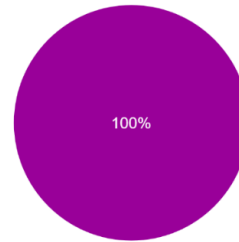
0. None

1. More knowledge about the game of chess

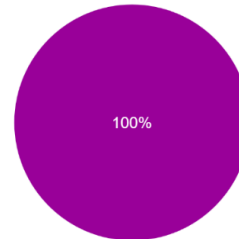
2. More knowledge about coding

3. More knowledge on artificial intelligence

Approximately what percentage of the pupils in your class showed the improvements described?



- 0. Less than 20 per cent
- 1. Between 20 and 40 per cent
- 2. Between 40 and 60 per cent
- 3. Between 60 and 80 per cent
- 4. More than 80 per cent

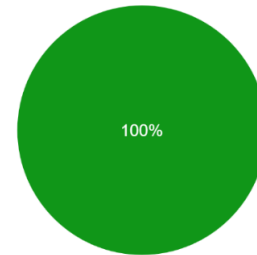


- 0. Meno del 20 per cento
- 1. Tra il 20 e il 40 per cento
- 2. Tra il 40 e il 60 per cento
- 3. Tra il 60 e l'80 per cento
- 4. Più dell'80 per cento

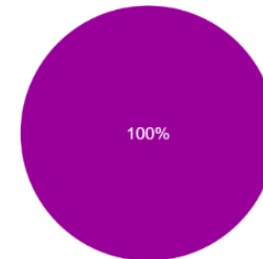
What improvements did you find, on average, in the COGNITIVE and METACOGNITIVE SKILLS of the pupils as a result of the experimentation?

Approximately what percentage of the pupils in your class showed the improvements described?

1. None
2. Increased ability to interpret problem situations
3. Increased ability to make autonomous decisions
4. Increased planning capacity
5. Improved time management skills
6. Increased ability to concentrate
7. Increased memory capacity
8. Increased ability in logic and mathematics
9. Increased ability to reformulate problem situations
10. Increased ability to find errors in one's work
11. Greater ability to evaluate one's own strategies
12. More



- 0. Less than 20 per cent
- 1. Between 20 and 40 per cent
- 2. Between 40 and 60 per cent
- 3. Between 60 and 80 per cent
- 4. More than 80 per cent

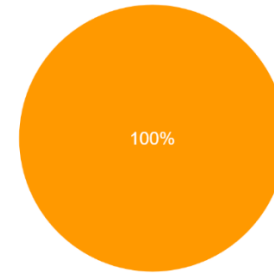


- 0. Meno del 20 per cento
- 1. Tra il 20 e il 40 per cento
- 2. Tra il 40 e il 60 per cento
- 3. Tra il 60 e l'80 per cento
- 4. Più dell'80 per cento

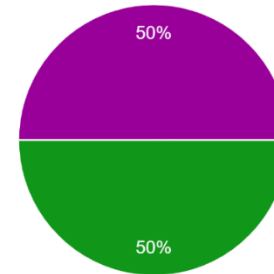
What improvements did you find, on average, in the SOCIAL SKILLS of the pupils as a result of the experiment?

1. None
2. Greater ability to overcome a defeat
3. Increased ability to relate to others
4. Greater ability to understand the views of others
5. Greater ability to respect rules
6. Greater ability to wait for one's turn
7. Improved conflict management skills
8. Increased sensitivity to the ethical risks associated with A
9. More

Approximately what percentage of the pupils in your class showed the improvements described?



- 0. Less than 20 per cent
- 1. Between 20 and 40 per cent
- 2. Between 40 and 60 per cent
- 3. Between 60 and 80 per cent
- 4. More than 80 per cent



- 0. Meno del 20 per cento
- 1. Tra il 20 e il 40 per cento
- 2. Tra il 40 e il 60 per cento
- 3. Tra il 60 e l'80 per cento
- 4. Più dell'80 per cento

Analysis of end-of-course student questionnaire data

What do you think this experiment has taught you?

Write anything you can think of!

56 Swedish students and 41 Italian students answered the questionnaire.

The Italian students answered the questionnaire in Italian. The Swedish students answered the questionnaire in English and the whole course was conducted in English

I learned chess much better class the I learned at home.

This experiment has taught me to think before doing something and this has been a really good opportunity :D

To reason and take things slowly.

Student questionnaire

What do you think this experiment has taught you?

Write anything you can think of!

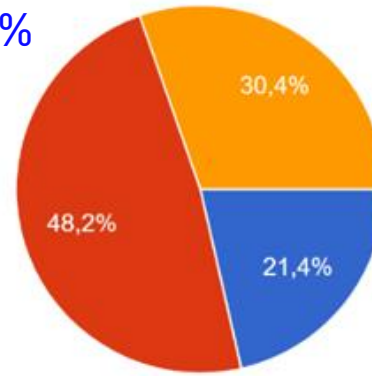
I learnt how to play chess, what artificial intelligence is and coding. In chess I learnt how the pieces move, for example the king and queen and so on, then I discovered artificial intelligence, which made me discover how many neurons there are in our brains, there are a good 1000000000 billion neurons. One neuron alone can't work so the neurons talk to each other by transmitting data and so they can answer all

¹⁹ the questions or problems.

I learned how robots and AI learns and I thought it was really interesting how they try and try and at last they actually learn how to play hide and seek or how to play tag. I liked playing chess the best because I have played it before, and it was fun to learn more and experience that.

Student questionnaire

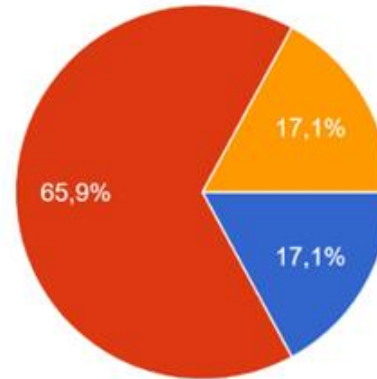
78,6%



- No
- Sometimes
- Many times

AFTER the classroom
experiment: Did you
play chess again?

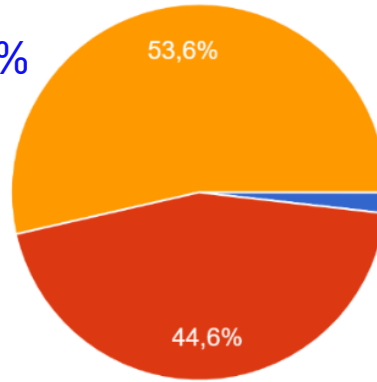
83%



- No
- Qualche volta
- Molte volte

Student questionnaire

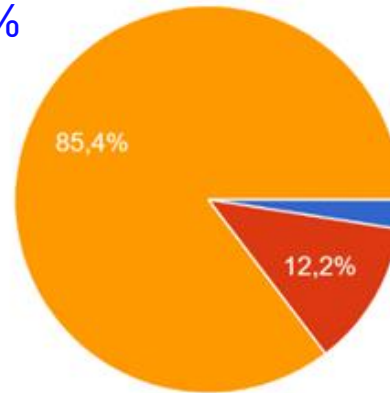
98,2%



- No
- A little
- Yes, very much

NOW Would you like to
continue in the
classroom: Playing
chess

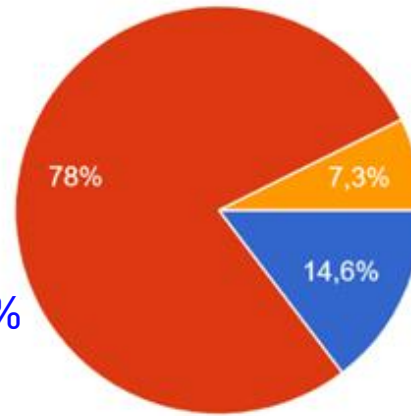
97,6%



- No
- Un pò
- Sì, molto

Student questionnaire

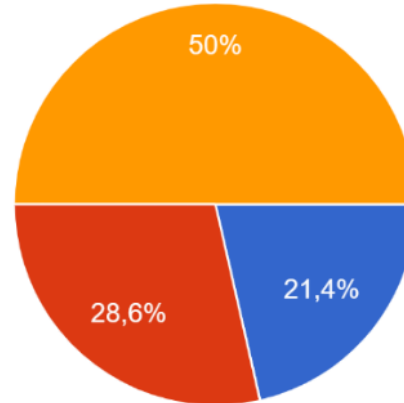
85,3 %



- No
- Qualche volta
- Molte volte

AFTER classroom experimentation: Did you use coding programmes?

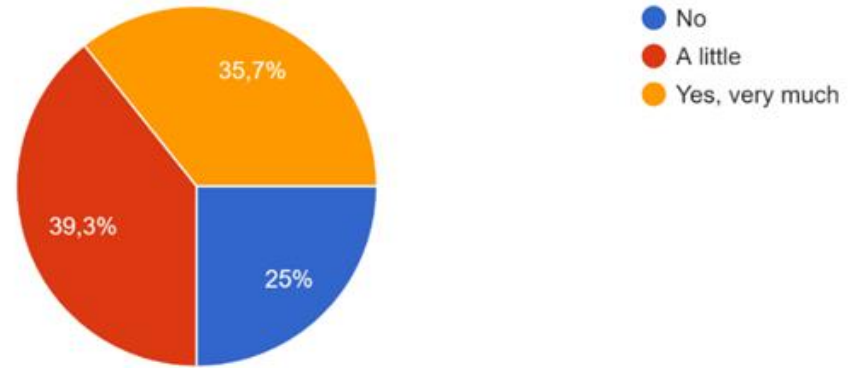
78,6%



- No
- Sometimes
- Many times

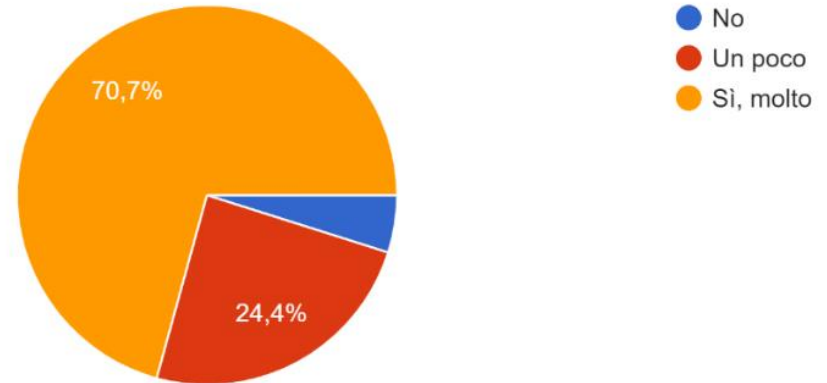
Student questionnaire

75%



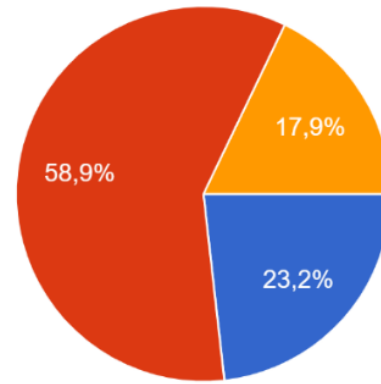
NOW Would you like to
continue in the classroom:
Doing coding activities

94,7%



Student questionnaire

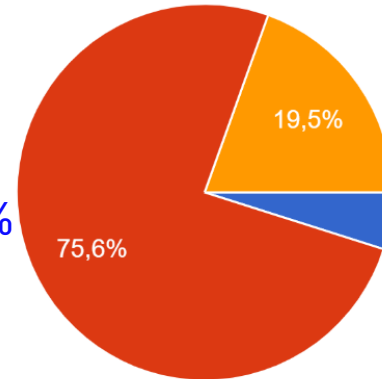
76,8%



- No
- Sometimes
- Many times

AFTER classroom experimentation: Did you reflect on artificial intelligence (the risks, the future, etc.)?

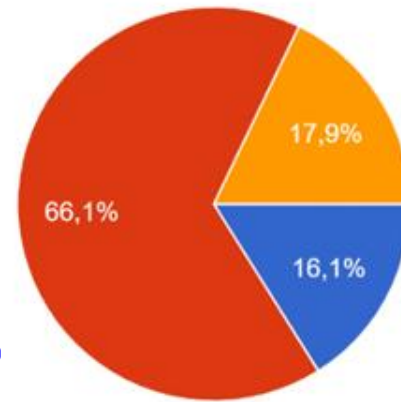
95,1%



- No
- Qualche volta
- Molte volte

Student questionnaire

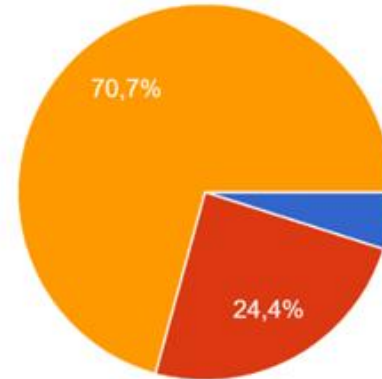
84%



- No
- A little
- Yes, very much

NOW Would you like to continue in the classroom: Learning on artificial intelligence?

95%



- No
- Un poco
- Si, molto

Concluding remarks for a re-edition of the course interview

The novelty of this project lies in the fact that it presents coding and AI through the game of chess.

- The duration of the course for pupils is appropriate, the pupils were able to continue playing chess during the interval and practising with “Gatto Vittorio”.
- As far as methodology is concerned, the answers to the "final student questionnaire" confirm that the proposal was welcomed with participation, enthusiasm and interest by the vast majority of the 97 students involved



Student questionnaire

DURING classroom activities

How did you feel?

- Good.
- Happy.
- Intrigued.
- Very curious.
- Interested.
- Enthusiastic.
- Quiet.
- Amused and happy.
- Good and comfortable.
- Very fun.
- It was fun.
- Really happy
- Confident.
- Good, interesting learning about ai and coding and chess.
- Surprised.
- Well and welcome.

Student questionnaire

Anything you want to add?

- I learned how robots and AI learns and I thought it **was really interesting** how they try and try and at last they actually learn how to play hide and seek or how to play tag. I liked playing chess the best because I have played it before.
- **I would like to start by saying thank you for this opportunity it was amazing and I use the chess boards that are in school and play with friends still.**
- **I got into the minds of others** and tried to figure out what moves they could make and responded with my own pieces.

Concluding remarks for a re-edition of the course interview

The novelty of this project lies in the fact that it presents coding and AI through the game of chess.

- Play is effectively presented as 'play', without burdening children with expectations and responsibilities that would distort the value of play as a learning activity.
- With regard to the setting, considering the feedback from students and teachers, it was clear that the experience was positively experienced from an emotional point of view. Even for the teachers who had no expertise in chess experienced.



Summary of the Teacher interview

Initial expectations, satisfaction with the course and results of classroom experimentation.



“I am very satisfied. Although some of the children have not been fully engaged, in all of them a change is evident in the way and amount of intervention and participation, in working more calmly, in being more thoughtful in playing”.

“Taking stock of the three pieces, I maintain that the chess course was new to everyone and therefore more time was spent on it, and it was very nice. It was a journey together. The coding lessons took place more quickly because the pupils have been doing coding activities since the first one (using code.org on the PC). But in the past it was always about hands-on activities, thanks to this project metacognitive reflection was possible with respect to coding activities, it was possible to name what you already knew how to do. The topics on AI were foreign to everyone, the children were enthusiastic and the topic immediately felt as if it was already theirs, as if they had a predisposition to understand it”.

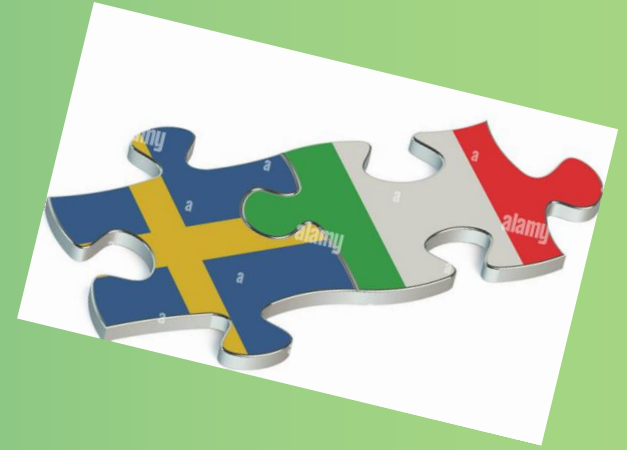
Teachers

End-of-course questionnaire

Anything you want to add?

- Most of the children initially appeared insecure, not very proactive and participative, and with a surrendered attitude. By the end of the course they had reached such competences that they felt confident, capable, more tenacious and eager to participate and express their views.
- The project was very interesting and engaging. I did not know how to play chess and the personal training was useful, but also challenging. The journey of learning together with the children was fascinating and a nice challenge for me.

Thanks for your kind attention



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