

Working with children

(age: 5-10 years)

Peculiarities, Challenges and Solutions, towards the First Decade of Experience in Bologna

Antonio De Blasi ⁽¹⁾, **Sandro Bardelli** ⁽¹⁾, **Francesco Poppi** ⁽¹⁾

Giovanna Chiricosta ⁽²⁾

Amalia Persico ⁽³⁾, **Eliana Lacorte** ⁽³⁾

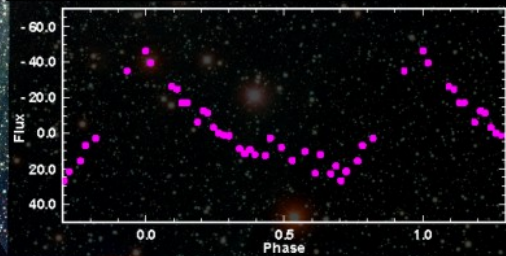
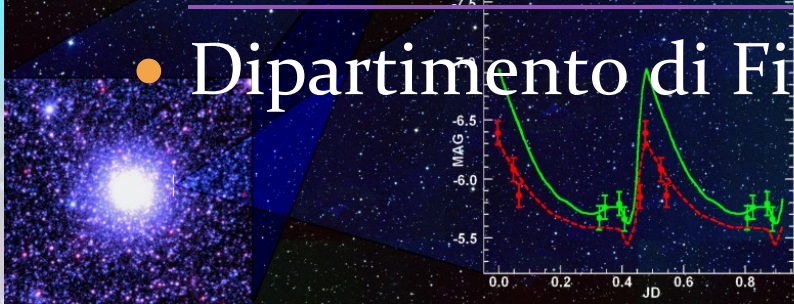
¹ INAF-Osservatorio Astronomico di Bologna ² Pedagogy consultant ³ Sofos Cultural Association



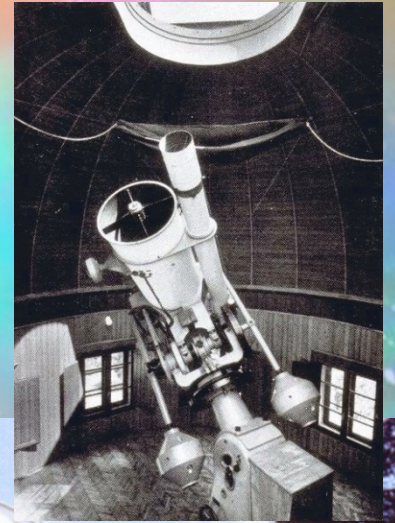
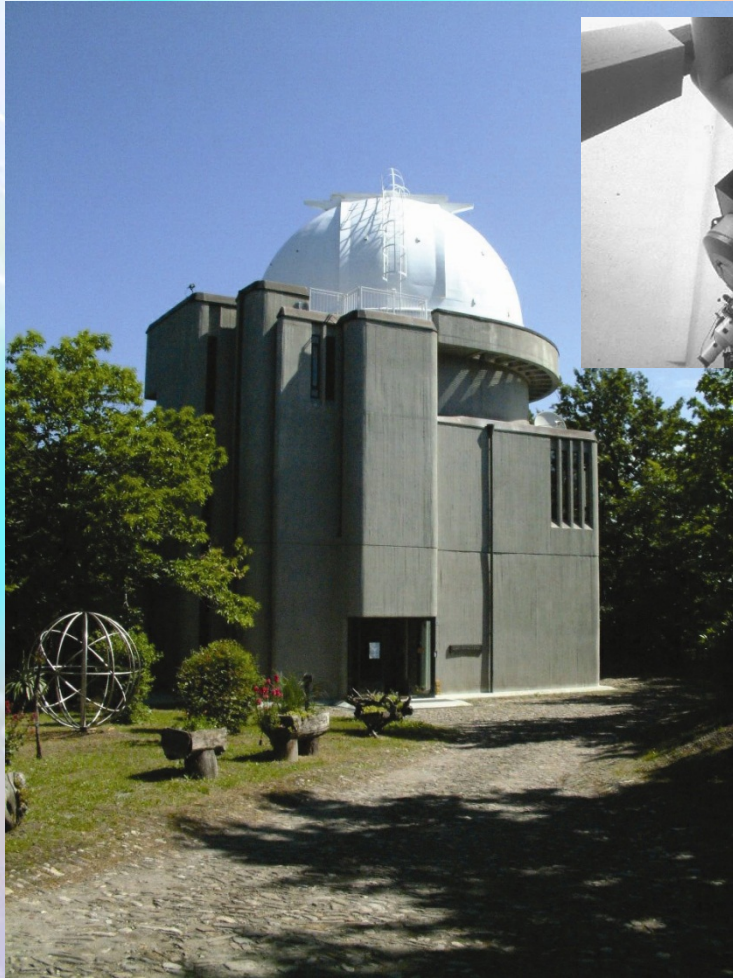
Working with children has some peculiarities which have to be taken into the account ...

Astronomia a Bologna

- Istituto Nazionale di Astrofisica – INAF
- Osservatorio Astronomico – OA-BO
- Istituto di RadioAstronomia – IRA
- Istituto di Astrofisica Spaziale e Fisica Cosmica – IASF-BO
- Università “Alma Mater” di Bologna
- Dipartimento di Fisica



Stazione Astronomica di Loiano



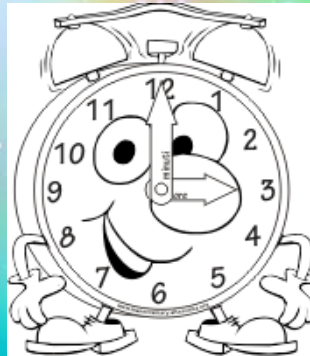
Stazione Radioastronomica di Medicina



Working with children challenges and peculiarities

Events and laboratories should satisfy some specific peculiarities:

- **duration of the activity:** children maintain attention for short periods



Our experience shows that a **laboratory should not last more than 50 minutes**, with different moments of interaction between animator and children: this is to keep their attention focused.



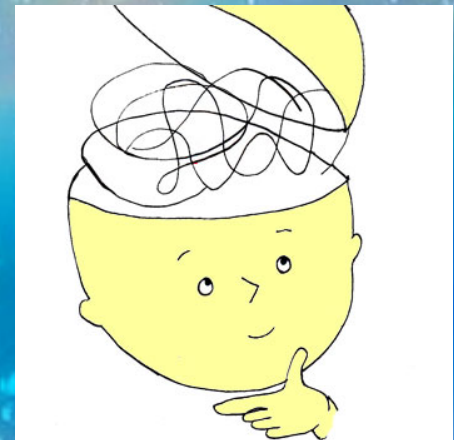
Working with children

challenges and peculiarities

Events and laboratories should satisfy some specific peculiarities:

- **duration of the activity:** children maintain attention for short periods
- **number of transmitted information:** only two or three issues possibly related to keywords

It is important to concentrate the **information in a few concepts**. Concepts must be **repeated several times**, using **different words**, and they must be **followed by easy examples**.



Osservatorio Astronomico
di Bologna





Working with children challenges and peculiarities

Events and laboratories should satisfy some specific peculiarities:

- **duration of the activity**: children maintain attention for short periods
- **number of transmitted information**: only two or three issues possibly related to keywords
- **engagement and interaction**: play a game, built something ...

children stores the information if, in addition to hearing, they involve other senses: like **sight** or **touch**.



Working with children challenges and peculiarities

Events and laboratories should satisfy some specific peculiarities:



- **fun**: concepts are better fixed if related to emotion



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Those four points highlight the importance to successfully develop educational activities and outreach children, **must have non only scientific competence but also teaching skills.**



Working with children

challenges and peculiarities

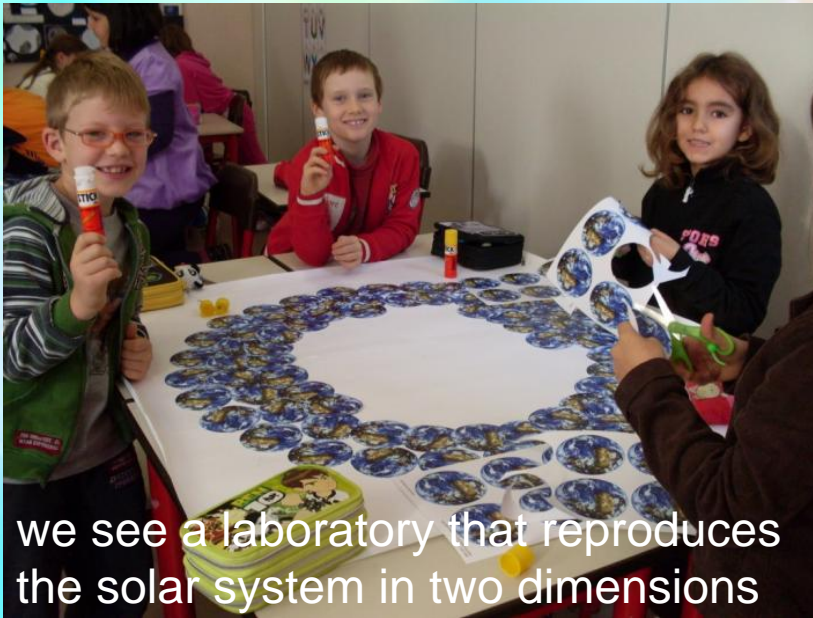
Events and laboratories should satisfy some specific peculiarities:

- **duration of the activity**: children maintain attention for short periods
- **number of transmitted information**: only two or three issues possibly related to keywords
- **engagement and interaction**: play a game, built something ...
- **fun**: concepts are better fixed if related to emotion
- **very difficult to evaluate the effectiveness of**

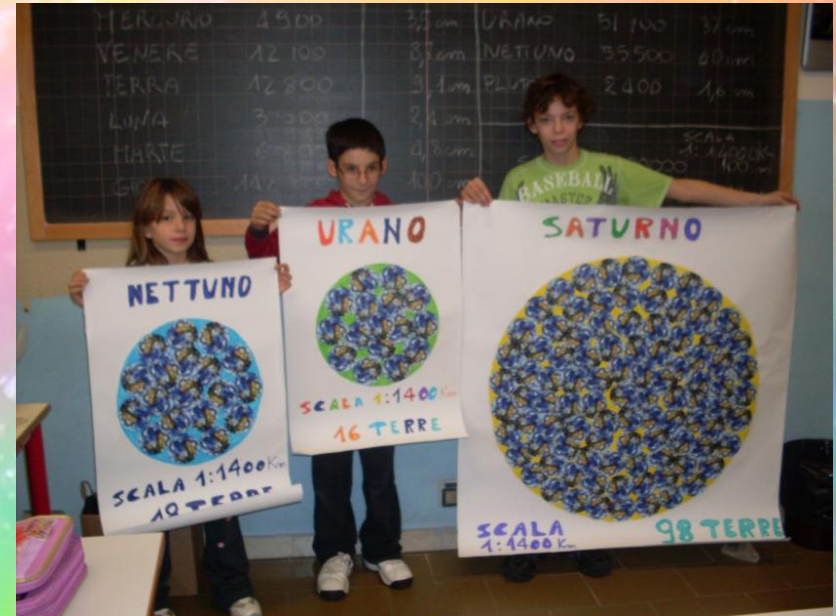
new strategies



Engagement and interaction: laboratories



we see a laboratory that reproduces the solar system in two dimensions



The basic information is the difference in size between the planets and the Earth.

and in in 2D dimensioni



we see a child using a spectroscope made previously by himself.

Fun and engagements: games

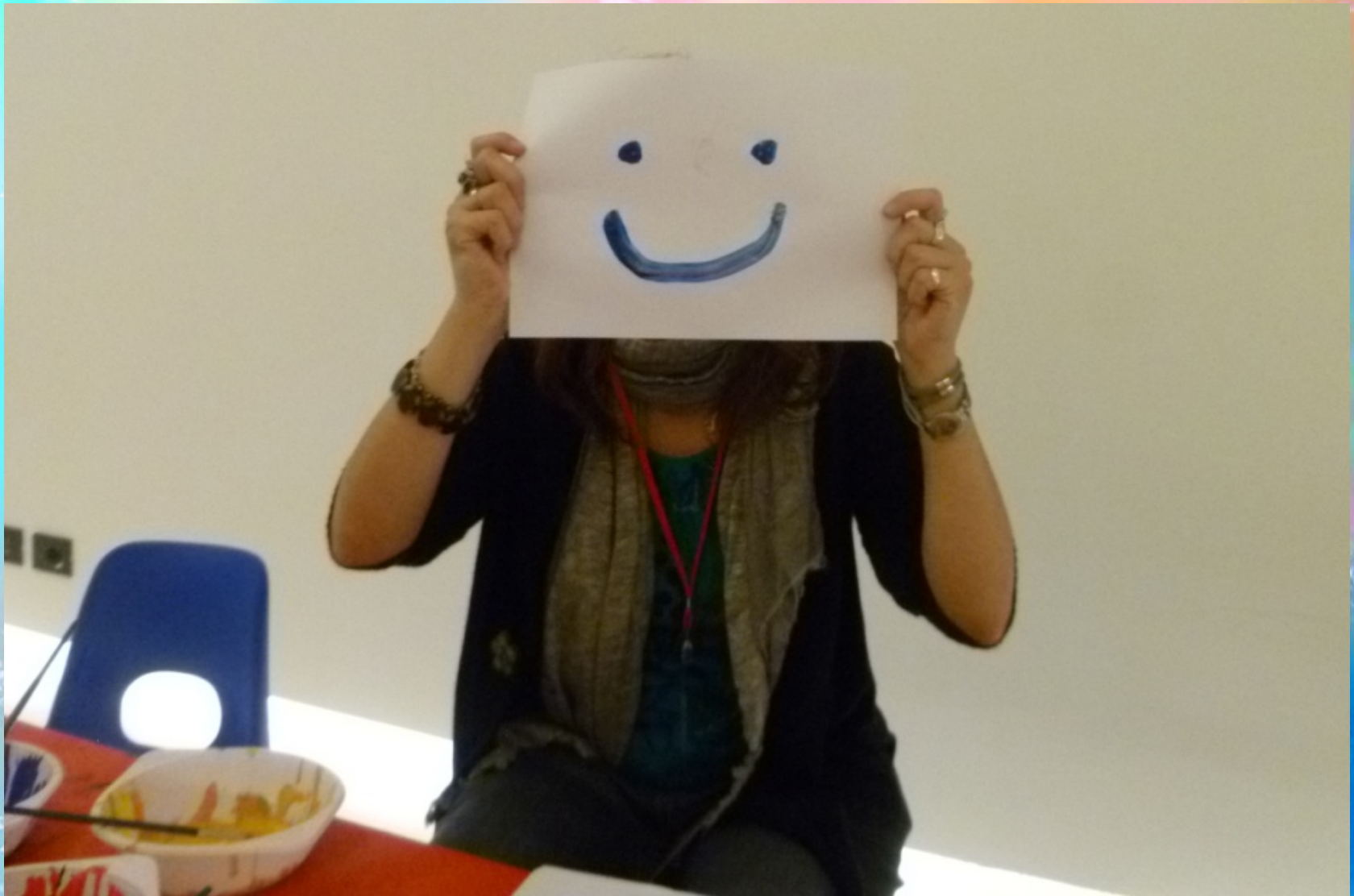
We have to fix concepts through physical activities and emotions.





Fun and engagements: games

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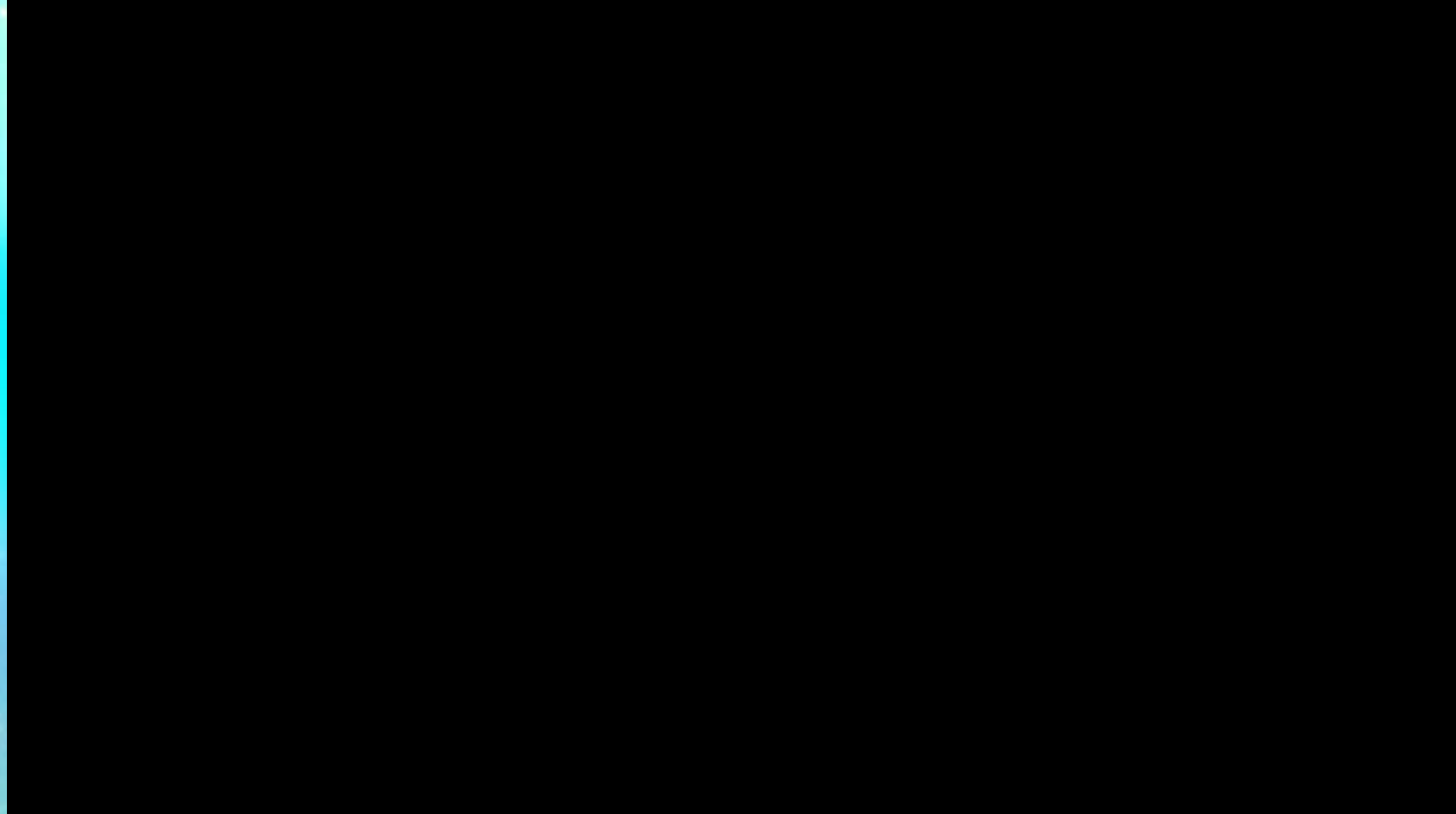
Fun and engagements: games

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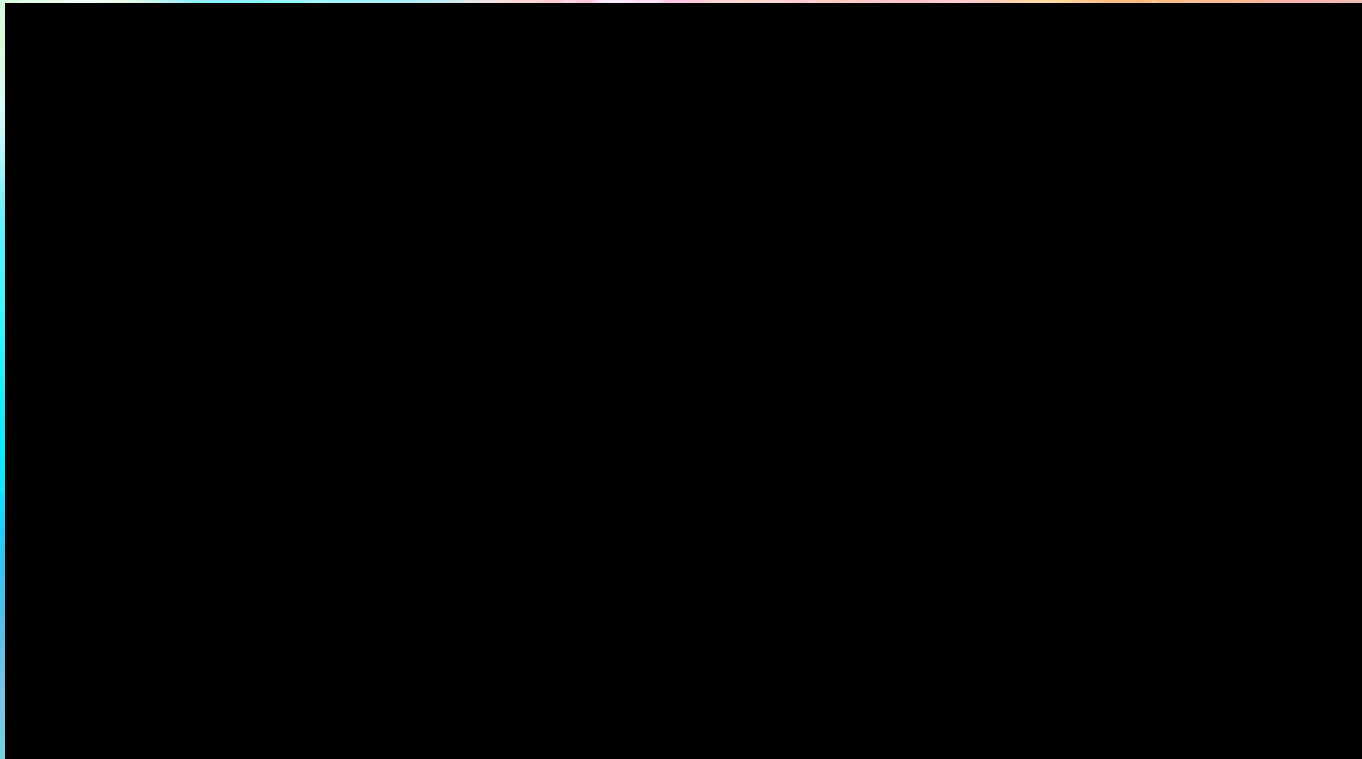
Fun and engagements: astronomical «Art Attack»



We made a video where we show how to construct a simple spectroscope with scissors, glue, cardboard and an engraved CD as a sink element



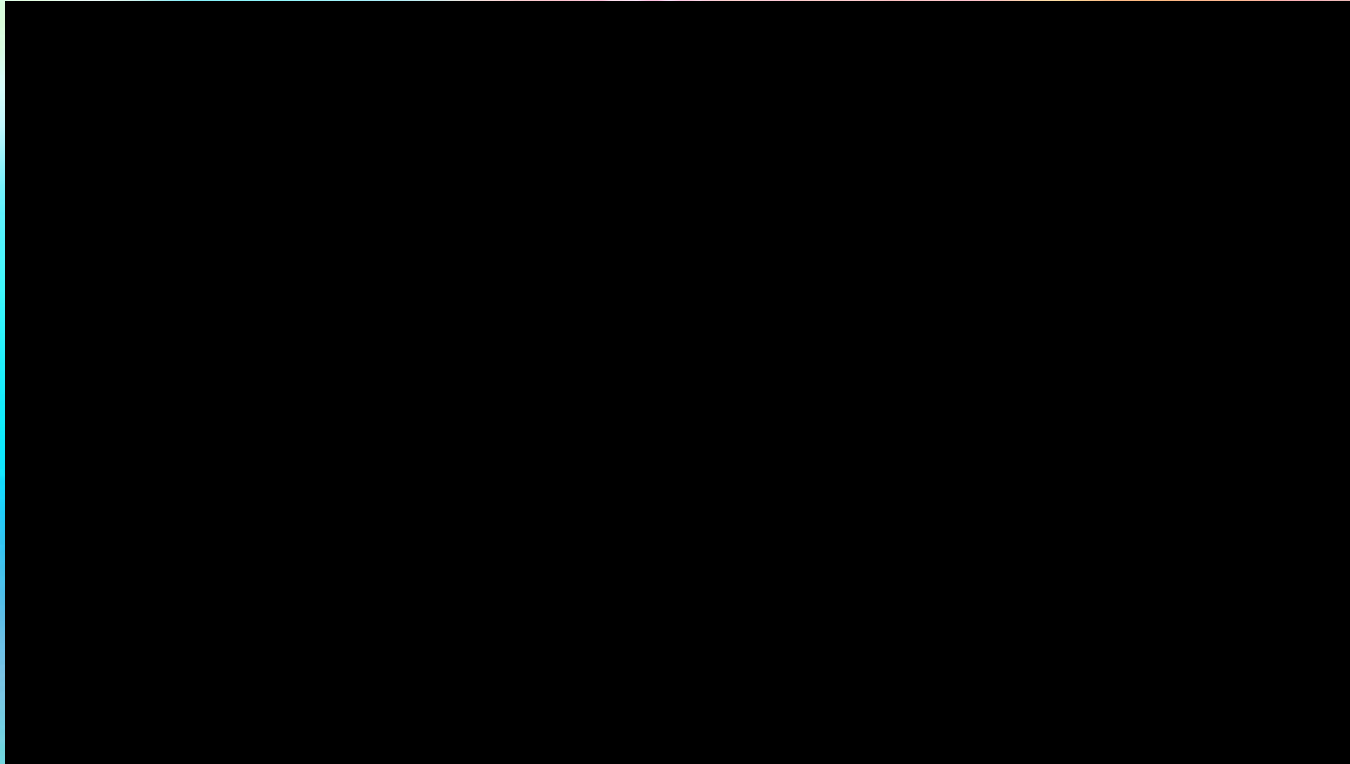
Fun and engagements : astronomical exhibits (ASIP – Bologna ed. 2011)



Exhibition ASIP 2011: Riding a bike and dressed as an astronaut, children go for a walk in the solar system, then weighed on a planetary balance, they can find out their weight on the various celestial bodies of the solar system, they can scratch the bolts with gloves as if they were in the space and they can try to drive a rover on a surface with very low friction.



Fun and engagements : play with the astronaut



Exhibition ASIP 2012: Children play with Paolo Nespoli by simulating life and games on the space station without gravity. Nespoli played with a yo-yo, with the jump rope, shoot with the ball, for an audience full of children.





PLANETARIUM AND EXHIBITS



The activities of the INAF OABO and Sofos take place in schools too, where we set up a planetarium and a traveling exhibition

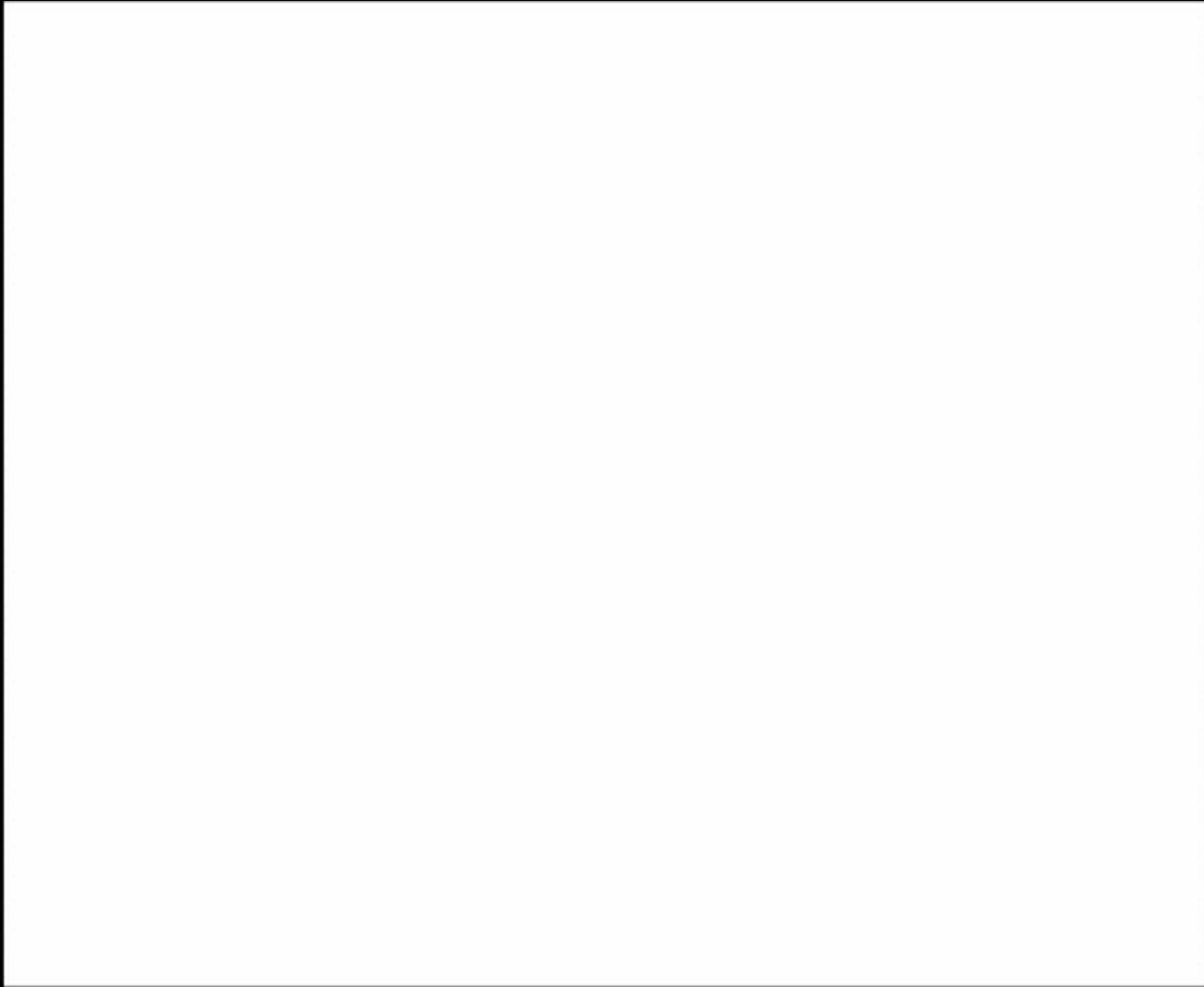


PLANETARIUM AND EXHIBITS





CARTOONS



E.R. 2009. We run a 1 year project with the cooperation of the Emilia Romagna region. We went to nine primary schools, one for each province. Using the planetarium and the laboratories, we provided scientific information to the children. Who, with the help of another association, used this information to create some videos. **In this video: why Pluto was demoted to dwarf planet.**



EVALUATION

After an activity it is difficult to stop a kid for a test or for questions

=> Also the evaluation should be done in the form of game

Chi è più grande della
Terra?



E chi è più piccolo?



It is difficult to force children to compile a questionnaire. Therefore, the only way to have an evaluation is to invent a game with that verify how the concepts are understood and remembered.

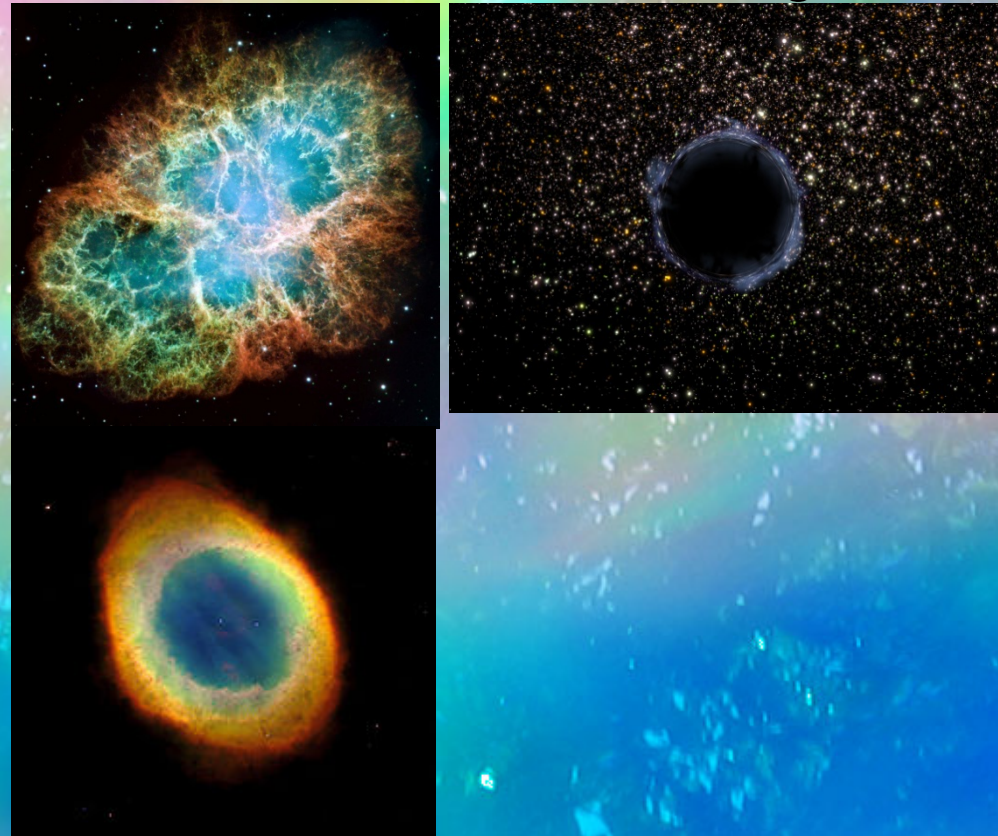
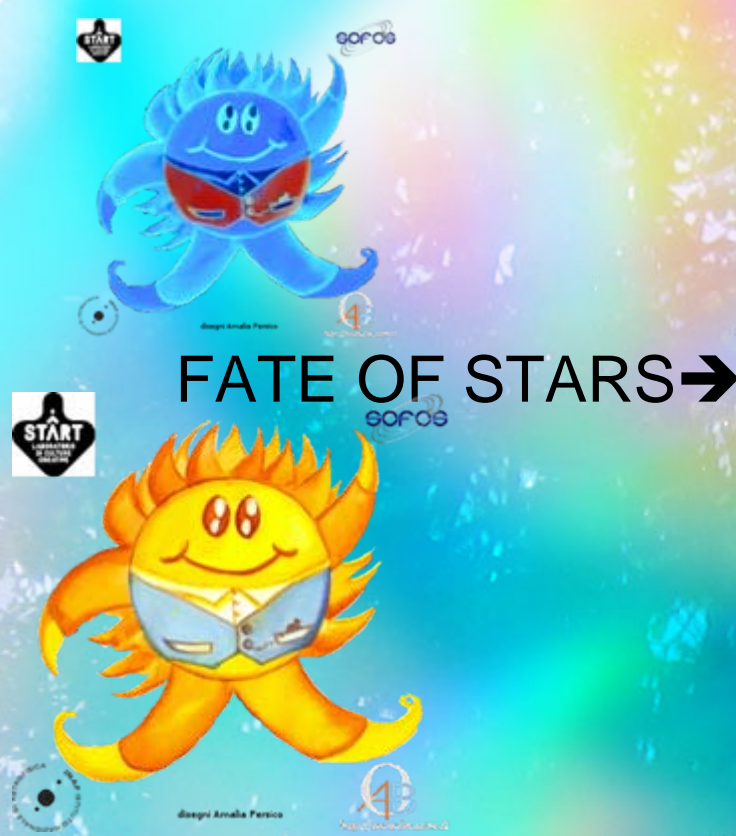
Test on the dimensions of planets. Name the celestial body which is larger and smaller than Earth? We had 95 % of right answers.



EVALUATION

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Test on the fate of stars (blue massive became supernovae and Black hole) Yellow stars less massive became Planetary nebulae 90 % of right answers.



EVALUATION

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Make a question and associate the answers to different pictures. Cut the answers and glue them on a poster.



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Thank you for your
attention ...



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