



Education and Heritage in the Era of Big Data in Astronomy

The first steps on the IAU 2020-2030 Strategic Plan

Destinazione Luna – to the Moon and back: experimenting digital fabrication to democratize Astrophysics and STEM in Public Schools
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◆ INAF

ISTITUTO NAZIONALE
DI ASTROFISICA

NATIONAL INSTITUTE
FOR ASTROPHYSICS

IAUS 367 - Virtual- 10/12/2020

LEARNING DIMENSIONS

ASTRONOMY & THE MOON

light & perception

space exploration

geometry

picture books

scientific sketching
& illustration

FILM & CINEMA

DIGITAL FABRICATION & MAKING

3d design
& printing

animation



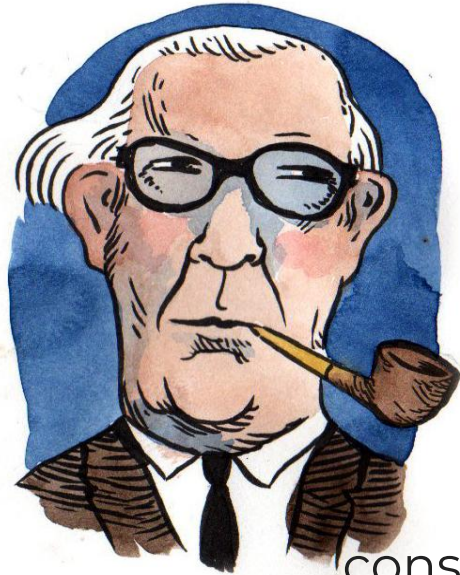
destinazione luna is a large and various outreach program: from en plein air movie night with 5000 participants to cozy workshops with kids, the ESA MOON camp with 20 female teenager through the year, to educational activities with a full class (kindergarten and primary).

in collaboration with CINETECA di Bologna and HAMELIN (cultural association based in Bologna)

We will now dig deep in the educational activity with full classes (DESTINAZIONE LUNA KIDS) and the development of a 3d printed lunatario.

This is the scheme of the learning dimension we are exploring

drawings: stefano rini



Jean Piaget

(Neuchâtel, 1896 – Ginevra, 1980)

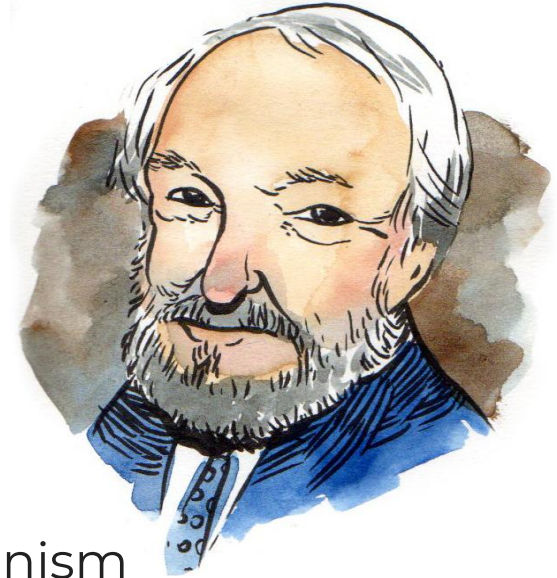
Constructivism: each individual learns while building mental models to understand the world around + epistemological idea of construction of knowledge

Constructionism claims that the learning happens more efficiently if the learner is engaged in building some physical object.

constructivism -> constructionism

TINKERING!

CODING!



Seymour Papert

(Pretoria, 1928 – Blue Hill, 2016)

and today

the
tinkering
studio™



why?

A large white satellite dish antenna is the central focus, mounted on a complex metal structure. The dish is partially illuminated by sunlight, creating a bright glow. In the background, several other similar dishes are visible, set against a backdrop of snow-covered mountains and a cloudy sky. The overall scene is a high-altitude radio telescope facility.

one of the reasons:

Constructionism introduces the concept of 'cognitive artifacts': objects or devices that facilitate the learning process and that people need the same way a builder needs building materials. These concrete products have to be shown, discussed, examined, investigated and admired. Real "construction kits" are proposed as a means to make the learning more concrete and close to reality.

What's a satellite for astrophysics (or a radio telescope) other than a giant and wonderful cognitive artifact?

resources:

(italian+ english+french + spanish?)

play.inaf.it



- + <https://play.inaf.it/destinazione-luna/>
- +
- + filmography, bibliography, Destination Moon: a booklet for both educators and parents, Moon exercise books, explorations with “lunatario”, preliminary activity to the “lunatario” for kindergarten, Moon and 3D printouts
- +
- + English/French Translation of this resource by Giuliana Giobbi INAF

destinazione luna kids

picture book

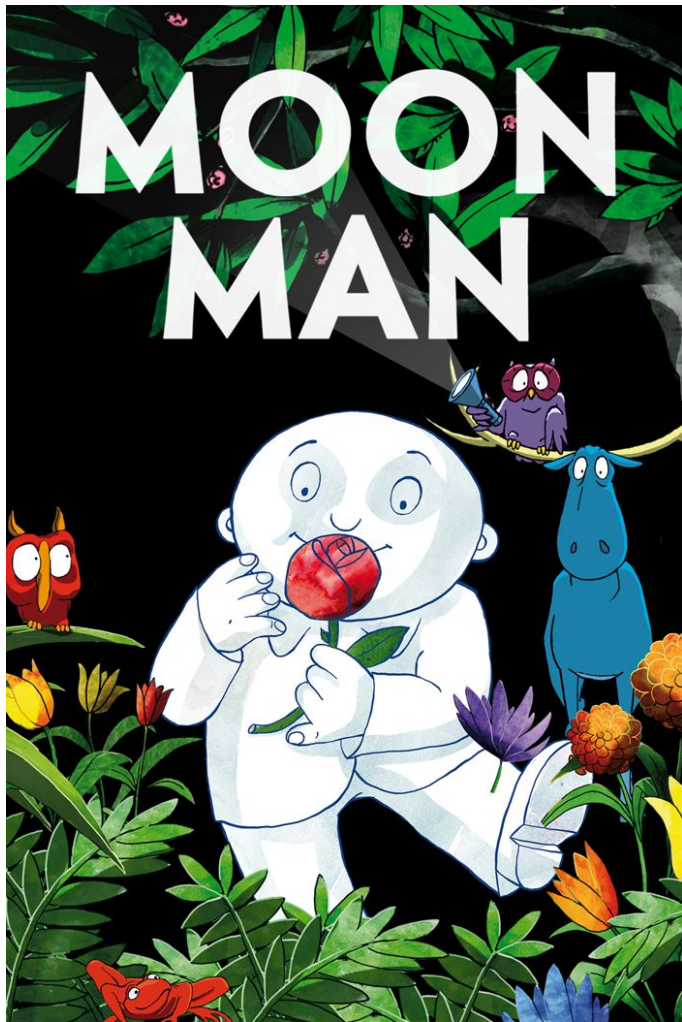
lunatorio

movie theater



stem steam stream.. steAm





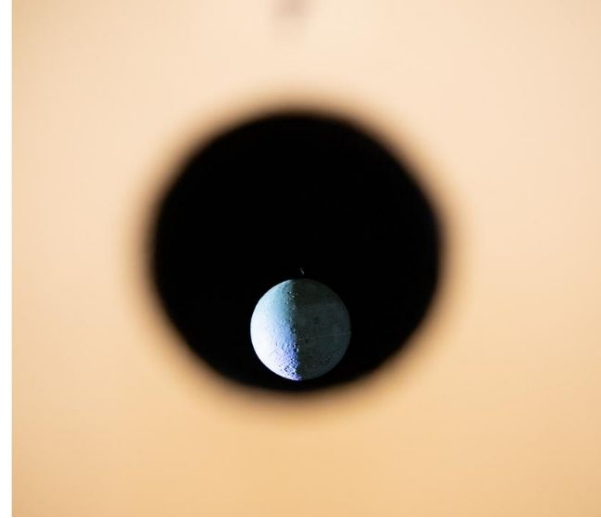
links to resources:

[bibliography](#)

[filmography](#)

[booklet](#)

lunatario

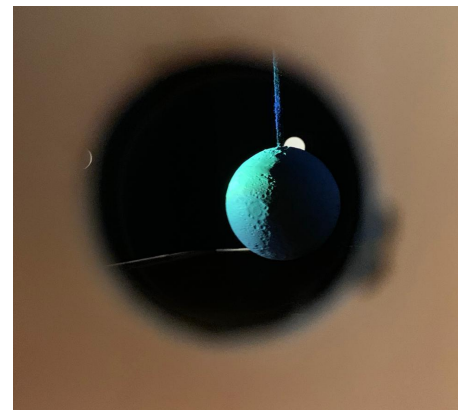
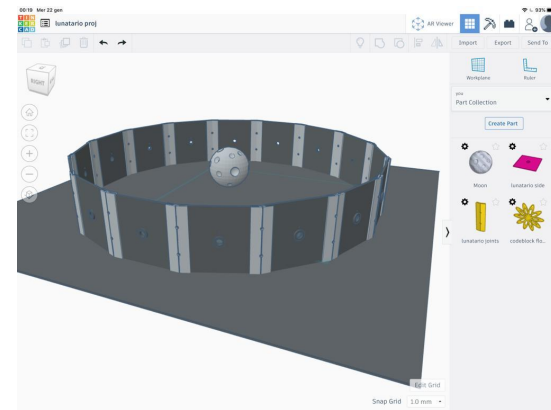


materializing ideas





light down in sala cervi



digital fabrication

destinazione luna: diverse experience

- Sara Ricciardi - INAF OAS Bologna (researcher **Astrophysics**)
- Fabrizio Villa - INAF OAS Bologna (senior researcher **Astrophysics**)
- Stefano Rini - IC12 Bologna and Regional Office for Education Emilia Romagna (teacher and trainer)

+ Cineteca di Bologna dipartimento Educativo: Cristina Piccinini (**Pedagogy**) Giuliana Valentini (**Visual Education**) and Simone Fratini (**Visual Education**)

+ Hamelin (cultural association): Federica Rampazzo (**young adults literature**) and Ilaria Tontardini (**picture books**)

+ Valentina Ferrante on lunatario design and facilitation **geophysics** researcher



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thanks for the attention

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