TEACHING TRAINING COURSE ON KIDS ASTRONOMY

- **Lectures Topics**
  - 3 – History of Astronomy
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- **Workshops Topics**
  - 12 – Star Parties.
  - 13 – Neighboring Planets
  - 14 – Moon Phases
  - 15 – Parallel Earth

- **Working Groups Topics**
  - 3 – Roads in the Sky

This course is designed for teachers of children before starting primary school. Some content is presented to give the teacher more resources, although they may be too ambitious for such young children, but the questions that they may sometimes ask require more extensive knowledge to be able to properly explain the issues that may arise.

WS12: Star Parties

Summary
The stars evolution introduced by means of “stories” is a good solution for explaining that stars live is similar to kids life. In a simple way we explain the life of a star that is the same kind of the Sun and explain his evolution and his final “party” as planetary nebula. The other kind of stars finished as a supernova are introduced too.

Goals
- Understanding stellar evolution.
- Understand the different types of stars.
- Understand the appearance of the heaviest materials inside stars

List of Materials.

Activity 1:
- 1 photocopy of the simplified HR diagram
- 1 blue, 1 red and 1 yellow coloured pencils

Activity 2: Model layers of the Sun
- 1 photocopy of two sheets with the parts of the Sun
- glue

Activity 3: Matchbox Model
- 1 box of matches,
- 1 thick black marker
- 1/8 CD
- 1 cutter

Activity 4: Cake Model
- 1 oven
- 3 eggs
- 1 yogurt
- 1 glass of oil yogurt
- 3 glasses of sugar yogurt
- 4 glasses of flour yogurt
- 1 envelope of yeast
- 1 glass of chocolate powder yogurt
- 1 round cake mold

Activity 5: Balls model
- 1 tennis ball
- 1 basketball

WS13: Neighboring Planets

Summary
A general and simple introduction of Solar System detailing the distances and dimeters of the planets. Some details about the Moon are also included too.

Goals
- Show in a simple way the meaning of the data on the planets of the Solar System that often appear in texts.
- Introduce, by playing, the set of movements of the Solar System
- Discover the Moons surface
- Consider the surfaces of some planets and moons

List of Materials

Activity 1: Distances to the Sun
- 1 roll of toilet paper
- 1 pen

Activity 2: Diameters Model
- 1 piece of yellow paper or yellow cloth to cut a circle of 1.39 m in diameter
- Paintings to draw the planets or paper with different colors to cut the disks of different sizes

Activity 3: Model of distances and diameters in the court
- 1 basketball
- 2 headed pins
- 2 fat headed pins
- 1 golf ball
- 1 ping pong ball
- 2 marbles glass

Activity 4: Model of distances with movement
- several pieces of chalk
- string

Activity 5: Orbital period Model
- 2 m rope
- 1 nut
- 1 piece of tube 12 or 15 cm long y 1 cm in diameter.

Activity 6: Terrestrial and Gaseous Planets
- 1 glass marble of 2,6 cm diameter
- 2 m of bubble wrap

Activity 7: Dioramas
- 3 shoe boxes
- Paint
- Flour
- Soil

- 1 astronaut doll
- 1 toy rover
- 1 toy car

WS14: Moon Phases

Summary

The following work deals with moon phases and several details about the Moon surface too.

Goals

- Understand the movement of the Moon around the Earth.
- Study the phenomenon of the phases of the Moon.
- See and distinguish the main features on the lunar surface.

List of Materials

Activity 1: Observe Phases of the Moon

- 1 poster paper
- several pencils

Activity 2: Phases in a shoebox

- 1 shoe box
- 1 cutter
- 1 white polystyrene or ping pong ball
- 1 flashlight

Activity 3: Phases with a stick and 2 balls

- 1 stick just over 120 cm
- 1 ball of 1 cm
- 1 ball of 4 cm
- 2 nails

Activity 4: Moon according to Hemisphere

- drawing of the Earth and Moon, cut along the dotted lines
- group of 2 kids.

Activity 5: Making lunar craters

- 1 tray,
- 250 g cocoa powder,
- 1 kg of flour
- 1 sieve
- several marbles of different sizes and density

Activity 6: Generating seas on the Moon

- 1 cola bottle
- 100 g sugar
- 1 cardboard 40x40cm
- 1 photo of Moon surface

- 1 scissors

Activity 7: Drawing the rabbit
- 1 photocopy of Moon surface
- 1 blue pen or pencil

Activity 8: Observation of Apollo 11 moon landing site
- 1 photocopy of Moon surface
- 1 blue red or pencil

WS15: Parallel Earth

Summary
The solar movements depend on the movements of the Earth (rotation and translation). The day and night are very easy to observe but the annual movements of the Sun are not so easy to understand and the seasons in particular. This is the main topic of this workshop.
It is introduced by means of consider the knowledge about the different temperatures, the different houses and cloth used in several areas of the world. The main idea is to connect astronomy with the global world.

Goals
- Understand the diurnal movement of the Sun: Day and Night.
- Understanding the annual movement of the Sun: Seasons

List of Materials

Scissors, cutter and glue or tail are required for the different activities

Activity 1: How to place the model
- 1 terrestrial globe
- 1 glass or a cup
- 1 cylindrical pencil
- 1 compass
- 1 small doll
- some chopsticks

Activity 2: Tales from the Parallel Earth
- No special materials

Activity 3:
- 1 terrestrial globe
- 1 toy helical spring (plastic or steel)

WG 3: Roads in the Sky

Summary
Introducing observations with the information included in this section. The constellations considered are easy to find and also we introduced the location of several celestial bodies related to the stars evolution mentioned in other workshops included in this course.

Goals
- Know the main constellations.
- Observe some objects in different stages of evolution

List of Materials

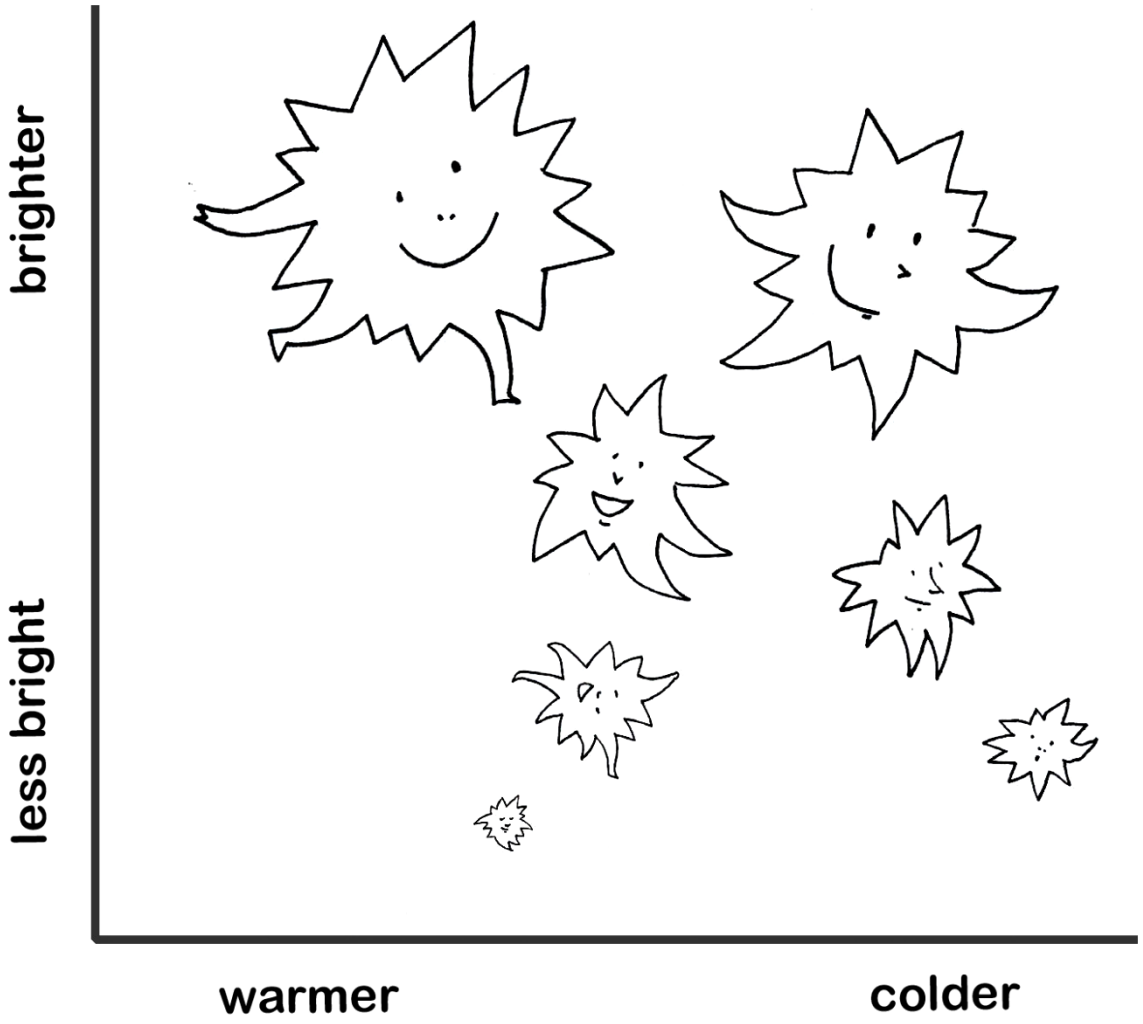
Scissors, cutter and glue or tail are required for the different activities

Activity 1: Constellation projector
- 2 boxes of matches
- 1 needle
- adhesive tape
- 1 phone flashlight

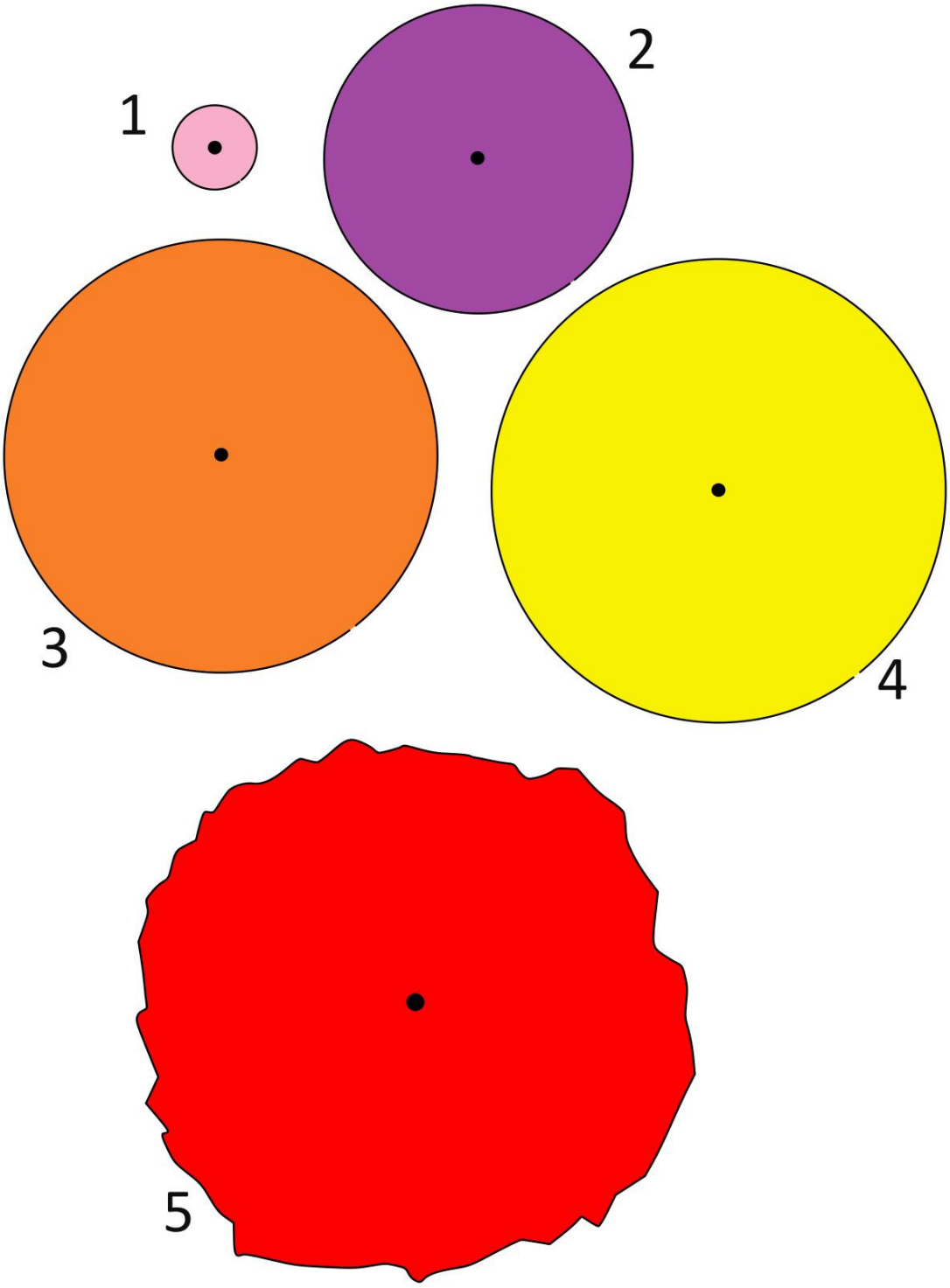
Activity 2: Stellar evolution in 5 steps
- 1 binoculars
- 1 tripod o 1 chair

Activity 3: The 5 steps in the big “G”
- print the drawing of the big “G”
- 14 small coins to stick drawings of a person such as a fetus, newborn, adults, old people and skulls to put later on the drawing of the large G
- print the photocopies of 1 fetus, 1 newborn, 8 adults, 2 old people and 2 skulls

WORKSHOP 12



WORKSHOP 12



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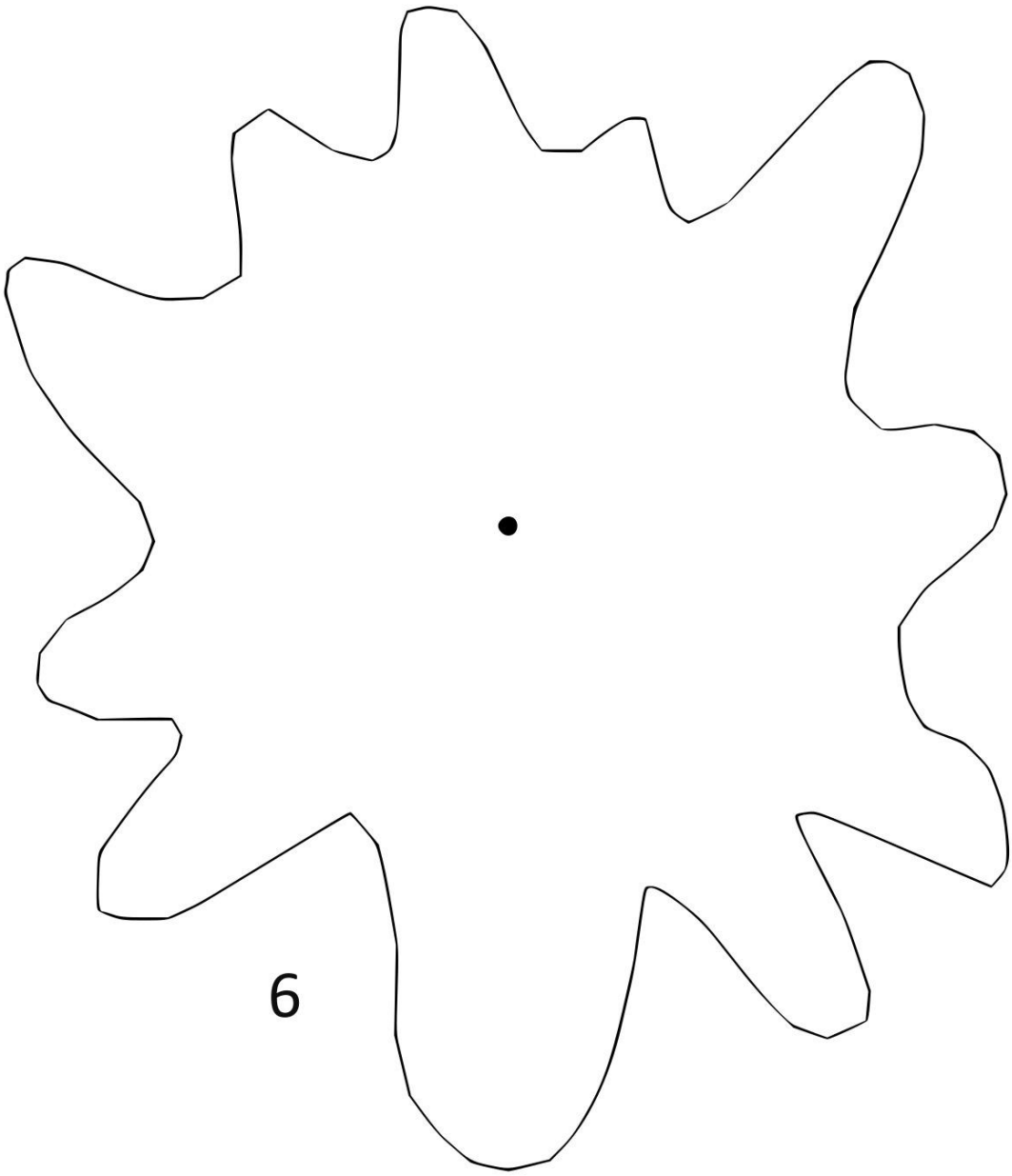

WORKSHOP 14

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WORKSHOP 14

WORKING GROUP 3