Star constellations

Summary

Age category
6 - 8 years
Topic
Geometry
Measurement
Numbers & operations
Total duration
420 minutes

Students explore the starry sky. They construct a telescope and reduced star constellations. They design their own star constellation.

Problem(s) to be tackled

How can we, by using a ruler and pictures, measure and construct a telescope and reduced star constellation?

Real context

Real-world motivation

The universe is expanding! We should leave future generations a picture of how it looks now.

Goals

Skills

Mathematics:

- Choosing and using appropriate mathematical methods to perform calculations and solve routine tasks (e.g. measuring distances, counting stars, ...)
- Using mathematical forms of expression to discuss, reason and give an account of questions, calculations and conclusions (e.g. identifying geometric figures)

Sciences:

- Expressing curiosity and astonishment (regarding the starry sky, myths)
- Collecting and reporting observations (drawing the starry sky based on observations)
- Presenting scientific insights (presentation of star constellation)

Technology - Engineering:

- Identifying and analysing technological solutions based on their appropriateness and function
- Identifying problems and needs that can be solved by means of technology and work out proposals for solutions
- Creating, using, evaluating and optimizing a technological solution (telescope)

Knowledge

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Mathematics:

- Measurement: distances, angles
- Geometric figures: lines, ...

Sciences:

- The universe: stars, star constellations
- Nature of science: astonishment, interaction between sciences and technology

Technology - Engineering:

- Telescope as instrument

Methodology

Part	Description	Timing
1	**Part 1** **Teacher's introduction** *The teacher introduces the context of the activity.* The teacher asks students about their prior knowledge of stars and star constellations and writes it down on the whiteboard. The teacher and students discuss their answers. The teacher introduces the star constellations activity and explains the upcoming work. The teacher gives the students homework to complete with their parents at home. The homework is to look up at the sky and explain or write down on a piece of paper what they observe/see.	60'
2	**Part 2** The teacher helps students visualise one star constellation by watching a movie and talking about it.	30'
3	**Part 3** The teacher tells students a story or myth behind one star constellation. Students are divided in groups of 3, 4 or in pairs. Each group chooses one star constellation for further study. They will conduct research into the star constellation that they chose and present it to the rest of the class by showing the picture and reading the myth. Use the engage and investigate part of the worksheet for students	90'

4	**Part 4** Students start with construction of the telescope (see the create version A or version B part of the worksheet for students) and the teacher hands out the materials needed. 4a) Construction of the star constellation on thick black paper (measure, use a ruler, proportions). 4b) Construction of the telescope. 4c) Decoration of the telescope. 4d) Create a new star constellation.	90'
5	**Part 5** Work with the investigate part of the worksheet for students.	120'
6	**Part 6** Evaluation; see the part report of the worksheet for students	30'

Organization

Materials

books and internet about stars, space, planets, paper cylinder (Pringles rolls, toilet paper rolls), ruler, tissue paper.

Printables

Worksheet Star Constellations

Grouping

Students will work in different group configurations (2, 3 or 4) during work. When constructing the star constellations, they will work in pairs.

Coaching

Useful questions

What did you think when you chose a star constellation?

Adaptations (abilities of age group, within the group, etc.)

Groups should be organised according to abilities, level-adjusted.

Assessment

Teacher’s assessment

Assessment takes place in a formative way throughout the activity.

Student's assessment

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Student questionnaire before and after the work about space.

Tips and tricks

Each group should use a torch and shine it through their telescope and point it towards the ceiling. This will create a sky full of star constellations.

Add more star constellations to your telescope.

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