

DRIVING QUESTION



How to design a space home on the moon?

LOCAL WORKING GROUP MEMBERS

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SCENARIO

Mijn ruimtehuis op de Maan

Home 1. Warmte 2. Water 3. Voedsel 4. Zuurstof

Mijn ruimtehuis op de Maan

Hallo, ik heet Niel en ik ben een astronaut!

Vorige week ging ik samen met twee andere astronauten naar de Maan. Onze missie was om er twee weken in een ruimtehuis te wonen.

Binnen enkele dag was echter ons ruimtehuis hartstikke koud, was het water op, ons voedsel op, en zelfs het zuurstof op. Noodgedwongen moesten we dus weer snel naar Aarde



- Recently, a group of astronauts have made a scientific attempt to live self-reliantly in a home on the moon for an extended period of time. Sadly, the group needed to return to Earth much sooner than expected because all of their resources had run out.
- One of the astronauts, called Neil, asks students to help them understand, redesign and improve their “flawed” moon home so the astronauts are able to revisit their mission once

again and live there comfortably for a much longer time.

- Two experts are introduced who help students to think of important key questions to ask in order to tackle all of the underlying scientific design issues: a scientist and an engineer.

PILOT ENACTMENT

Begin date: Sept 1th 2009

End date: Nov 1th 2009

Duration of each session:
2 hours, one session each week.

Grade level: 6th grade (11 to 12 years old)

Subject: Ecology

Number of participating students: 20

Enactment teachers: 1 to 3

WORKSPACE

The pilot WorkSpace environment consists of one template.

The template is intended to allow students to make design sketches of their (initial) moon homes and supplement these sketches with functional annotations and descriptions to explain why their moon home designs look the way they have come to look.

LEARNING GOALS

By the end of the learning program students are expected to:

- Demonstrate an understanding of problem analysis: problem identification, problem articulation and deriving problem constraints.
- Demonstrate an understanding of form-function thinking with the domain through leading questions.

INQUIRY ACTIVITY OVERVIEW

- Introducing students to Stochasmos, reflective scientific inquiry, and the domain.
- Activating students' prior knowledge on the specific design assignment.
- Students construct and work with a 'driving question instrument' related specifically to the domain of Ecology.
- 7 Students learn about design solutions specifically related to the concepts of warmth, water, food and oxygen.
- 8 Students are assessed on their acquired knowledge of the domain, application of driving questions and form-function thinking, and justify their designed moon homes in whole class exhibitions.