

**The Making of a Space Helmet**

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**Arts in STEM**

## **The Making of a Space Helmet**

### **Standards:**

#### **Common Core State Standards**

W.2.7-Participate in shared research and writing projects (e.g. read a number of books on a single topic to produce a report: record science observations.)

SL.2.1-Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

SL.2.3-Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

SL.2.4-Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.

#### **Next Generations Science Standards**

1ESS1-1-Use observations of the sun, moon, and stars to describe patterns that can be predicted.

#### **K-2 Engineering Design**

K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

#### **Oregon Visual Arts Standards**

VA.1. CR1.2- Make art or design with various materials and tools to explore personal interests, questions, and curiosity.

### **Objectives:**

- Students will be able to work in teams or small groups with all participating in the building of the helmets.
- Students will be able to revise their plan after testing their helmet using the engineering design method.
- Students will use their new knowledge of space to construct an astronaut helmet.
- Students will sketch their design and revise design model as needed.
- Students will use supplies given to construct their helmet.
- Students will be able to present a final project to present to the class
- Students will construct questions or comments about each other's helmet.

### **Justification:**

In our First Grade science, students will have been learning about the basics of our solar system; sun, earth's moon and the eight planets. They will have watched videos of the first moon walk and videos from satellites. This lesson will be the one of a unit of lessons that will allow students to explore space as an astronaut. In this lesson, we will be integrating art and engineering by having the students design and test their astronaut helmets. Once helmets are built with the specified items, students will be able to get creative and decorate their helmet. The students/astronauts will be wearing their helmets throughout this unit on space. This lesson should take one-two science periods depending on the amount of time spent on videos and sharing at the end.

### **Engage:**

After watching some videos about space and earth's satellites, have students pretend they are an astronaut and they have been given the job to go look for a new planet. Discuss and brainstorm ideas of what would they need to be able to go into outer space to look for planets?

**Explore:**

1. Students are put into teams or small groups.
2. Show and describe the supplies that they will be able to use. Have all the supplies in the community area so that students can easily get what they need.
3. Explain the challenge to the students. Before the students/astronauts can go into space, they will need a helmet to protect their head. This helmet also needs to have an oxygen tube that will connect back to the space ship to supply them with oxygen. Students can help each other with the fitting of their helmets.
4. Students are to start with sketching their ideas for helmets in their science journal. This can be worked on with their partner or group. Once they have agreed on a helmet prototype, they may start assembling them.
5. Once everyone understands the challenge let the students begin. Remind the students they will have 20-30 minutes to build and decorate their helmets.

**Elaborate:**

1. Tell students their helmets have to be checked by the teacher to make sure helmet has oxygen line and stays on their head before decorating can begin.

Let them add any other important details they think they might need in space.

**Supply List** (here are some examples)

Construction paper

Felt

Pipe cleaners

Yarn

Tape

Glue

Cardboard

Note cards

Paper bowls

Markers and crayons to decorate their helmet when they are done.

**Explain:**

1. Once students are finished with their helmets, students will take turns sharing their helmets with their class and explaining how their helmet will help them in space.
2. The classroom will be encouraged to ask questions or give positive comments about their fellow student’s helmet.
3. Culminating activity- have students look back at their sketches and notes in their notebook and record the changes they made to their original drawing and why.

**Evaluation:**

**Astronaut Helmet Project Rubric**

<b>Criteria</b>				
	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Elements & Principals of Design	Planned carefully, made sketches, and showed an advanced awareness of the elements and principals of design. Student went above expectations	Artwork shows that student applied principals of design while using one of more elements effectively. Student met expectations.	Student did the assignment adequately, yet shows a lack of planning and little evidence that an overall composition was planned.	Assignment was turned in, but showed little evidence of any understanding of the elements and principals of art. No evidence of planning. Student did the minimum of work required.
Craftsmanship & Neatness	All aspects of the artwork were considered and completed. Finished product is a result of careful planning. Craftsmanship is outstanding. Project is pristine and well organized.	With a little more effort in finishing techniques, the artwork could be outstanding. Overall, the project is clean and without major defects.	Student showed average craftsmanship; adequate, or not as good as the student’s previous abilities. Minor defects may be present.	Below average craftsmanship, lack of pride in finished artwork. Showed little evidence of effort and/lack of understanding. Includes obvious defects.

Time & Management	Class time was used wisely. Much time and effort went into the planning and design of the artwork. Student was self-motivated.	Class time was used wisely. Some time went into planning and design of the artwork. Student needed some refocusing.	Class time was not fully utilized. Little time went into the planning and design of the artwork. Student was sometimes distracted.	Class time was not used wisely. Little effort went into the artwork. Student was often off task and not focused on the project.
Execution, Originality & Uniqueness	The artwork was successfully completed from concept to completion with an original approach.	Artwork was completed with some evidence of examples.	Artwork was partially executed with a few unique aspects.	The artwork was started but never completed. The work completed was mainly from examples.
Requirements	All requirements are met and exceeded.	All requirements are met.	One requirement was not met completely.	More than one requirement was not met.