

SUBJECT: Science
GRADE: 4
DATE:
DURATION: 60 minutes
TOPIC: Unit – Sense Organs Sub-topic: Extending the Senses
ATTAINMENT TARGET: <ul style="list-style-type: none"> ○ Gain an understanding of some life processes in plants and animals, and how lifestyle choices impact health and well-being in humans. ○ Gain an understanding of and apply the engineering design process.
BENCHMARKS: <ul style="list-style-type: none"> ● Know the basic functions of the sense organs in humans and other animals. ● Display curiosity, objectivity and perseverance in their approach to activities
LEARNING OBJECTIVES: <ul style="list-style-type: none"> ● Analyse situations in which the sense organs can mislead us ● Explain ways in which technology can extend the senses ● Create a simple device to extend the senses ● Show interest in the outcomes of investigations on the senses ● Recognize different images based on appearance and perception
KEY SKILLS: collaborate, create, communicate, analyse, interpret, plan and design, justify
KEY VOCABULARY: sense organ, limitation, extend, senses,
MATERIALS/RESOURCES: Powerpoint presentation, images, pictures, different sized objects, worksheet, pictures of instruments that extend the senses, magnifying glass, microscope, spectacles, hearing aid, headphones, instructions to make periscope/ telescope, scissors, cartridge paper, straw, plastic wrap, piece of glass, tape, ruler
CONTENT OUTLINE: Information about our surroundings is processed through our senses. However, when compared to some animals, human senses are limited in some respects. Technology, such as special instruments, has been used to extend the human senses. These include binoculars, microscopes, periscope, hearing aids etc. These help the sense organs to gather information they would not normally be able to process based on distance and details required.
PRIOR LEARNING: Check that students can: Relate the senses to the particular sense organs
LEARNING OUTCOME: Students who demonstrate understanding can: <ol style="list-style-type: none"> 1. Cite instances where the sense organs become limited 2. Create and use instruments (technology) to extend the senses

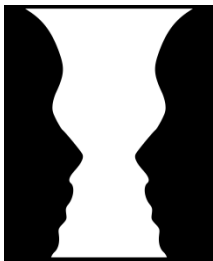
ASSESSMENT CRITERIA:

- Logical explanations given
- Images are correctly identified
- Instrument works as intended
- Use and transfer of knowledge evident in design

PROCEDURES/ACTIVITIES

Engage - *How can I get students interested in this?* Use of an interesting picture/video/etc. (5 min)

- Students will view images showing different perceptions. For example, those shown below. Observations and interpretations will be recorded and discussed.



Cup or faces



old or young woman

- *Teacher will clarify any misconceptions and direct students to form their own groups to carry out the next activity.*

Explore - *What tasks/questions can I offer to help students puzzle through this?* Use of a simple investigation. (10 min)

- Students will be carried through a series of eye exercises, placing objects (differing in sizes) at different distances apart or on charts. Have students record on a sheet what they see
- In groups, students will engage in a discussion to determine what was seen and what difficulties they encountered.
- *Teacher will assess how each group is carrying out the activity and offer guidance as needed. Difficulties faced by visually-impaired persons and the care to be shown to them will be highlighted and discussed.*

Explain - *How can I help students make sense of their observations?* Class presentation and discussions. (10 min)

- Each group will present their findings and explanations as to the images seen and the reasons for the differences. Limitations of senses will be discussed. Students will suggest how the limitations of the senses can be corrected. Instruments (technology) that can extend the senses will be recorded by students in a table (or worksheet).

- Students with learning challenges: Use a teacher-prepared graphic organizer and fill in the instruments used to extend the senses/ OR Research (Internet) and draw diagrams of these instruments.
- *Teacher notes information presented by students on the board and offers clarifications of any misconceptions held and provides additional information to students.*

Elaborate - *How can my students apply their new knowledge to other situations?* Application of what they learned. (10 min)

Given a scenario where a person's eye is unable to see far objects or objects underwater, students will plan and design an instrument which can be used to extend their sense of sight. Instructions on how to make a periscope or telescope will be provided. Using the materials provided, students will plan and design their instrument, noting all measurements used.

- *Teacher offers guidance during the design process and instructs students to use the Design Rubric to assess the designs as they are presented. Misconceptions will be clarified by the teacher.*

Evaluate - *How can I help my students self-evaluate and reflect on the teaching and learning, and how can I evaluate the students learning of concepts and skills.* Assessment (10 min)

- Students will explain how the instrument works, materials used, and how the senses will be extended. This will be assessed using an Engineering Design Rubric.
- Students will peer-assess the designs and suggest improvements.
- An Exit Slip will be used to check for understanding.

EXTENDED LEARNING: Research different animals which have extraordinary sense of sight.

LINKS TO OTHER SUBJECTS:

- Mathematics, Resource and Technology

POST-LESSON REFLECTION:
