

# Teacher Guide for *Odyssey, The Science of Reflection*

December 2006

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- **Pre-reading activity:** Have the students work in groups to brainstorm on the use of mirrors.

## **Monkey See, Monkey Do** (page 2-3)

Ideas to assist the reading of this passage:

- What are mirror neurons?
- What is the function of mirror cells?
- Describe how neurons are linked to intentions.
- Explain why watching someone eat a banana might make a monkey want some as well.
- Explain how our mirror neurons can help us learn a new skill.

## **Mirror, Mirror, Way Up High** (page 3)

- Describe 3 advantages of the blimp-design telescope.

## **“Mirroring” the Future** (page 4)

Suggestions to help guide the reading:

- Why does this article suggest that the “future mirror” might become a nightmare for some people?
- Describe how it monitors a person.
- Explain the magic in the system.
- What is capology?
- Explain what advantage there might be for dieters who own such a piece of equipment.
- **Skill development:**
  1. Write an opinion piece about the “future mirror”. Support your choice using details from the article.
  2. Divide the class into groups for a debate activity. Let the students prepare their arguments for and against the “future mirror”.

## **Cell Phones** (page 5)

- As a whole class or in groups, ask the students to make a list of reasons indicating why cell phones could be hazardous to your health.

- Research: Ask the students to complete a research project about the dangers of cell phones.
- Art: Let the class make posters that will alert the public to the dangers of cell phones.
- Complete a chart such as the following: The Values of a Cell Phone

Positive Aspects of a Cell Phone	Negative Aspects of a Cell Phone

### Mirrors Reflecting Culture throughout the Ages (pages 6-9)

- This article has 4 distinct sections plus an introductory passage. Use the **Jigsaw** method to read this material. Divide the class into 4 or 5 groups. If you choose to have 4 groups, the introduction could be done in a **Read Aloud** method. After each group has completed reading and making notes, they will present their information to the entire class.
- **Writing:** You may wish to have the students write a summary piece. One of the following titles could be considered:
  - The Use of Mirrors
  - The History of Mirrors
  - The Use of Mirrors in Fiction

### Mirror Maze Mystery! (pages 11-13)

- Arrange the students in pairs to complete this assignment.
- Use the **Think, Pair, Share** method and ask the students to read this article. The students should first read the whole story with their partner. Secondly, they will read again but this time they will make notes about the information.
- There are 4 types of mirrors mentioned – flat, convex, concave and a combination of the latter two. Students could use their notes and make presentations to the other students.

### A Look Inside the Looking Glass (pages 19-21)

- Explain why mirror glass must be superb.
- Describe how a sheet of glass becomes a mirror.
- What are dielectric mirrors?
- Writing: In a paragraph, predict a(some) future advance(s) using mirrors.

### Extremely Large Telescopes: Bigger & Better (pages 23-25)

Use these questions to focus the reading of this article.

- Explain why a larger telescope is better.

- What is “aperture fever”?
- Why did Herschel switch to mirrors?
- Why was his Forty-foot Telescope somewhat of a failure?
- Describe the contributions made by Edwin Hubble.
- In the 1970’s, what problems presented themselves?
- What are segmented mirrors?
- How did bees contribute to the advancement of telescopes?
- How did they tackle the problem of distortion?
- What are adaptive optics?

### **Refractors vs. Reflectors** (page 25)

- What is the difference between refractors and reflectors?
- Make a list of problems with refracting telescopes.

### **The Giant Magellan Telescope** (page 26)

- Describe the Giant Magellan Telescope.
- What are the advantages of this instrument?
- Use your knowledge of history to suggest why this equipment might have been called **Magellan**.

### **Hidden Mirrors, Hidden Worlds** (pages 28-31)

- After reading this story, ask the students to explain the main message of the passage.
- Creative Writing: Ask the students to write a story about someone and their use of the computer. It could have similarities to this article or be completely different.

### **They Glow in the Dark and Ping the Moon** (pages 32-35)

- What is a retro-reflector?
- Make a list showing how we use these reflectors in our daily lives.
- Explain “Who says that we don’t go to the moon anymore?!?”.
- Describe the changes that are taking place between the Earth and the Moon.

### **To Infinity and Beyond** (pages 36-39)

- If possible, set up the experiment described in this article.
- Research: Students might obtain books from the library and read further information about the kaleidoscope. This data could be shared with the whole class.

### **Reflecting on Gravity: The Mirrors of LIGO** (pages 40-43)

- What are space ripples?
- Summary: Ask the students to summarise the main points from this article in their notebooks. When they are finished, make a summary on the chalkboard using their ideas.