

**Grade Level:** 6-8

**Curriculum Focus:** Technology

**Lesson Duration:** Two class periods

### ***Student Objectives***

- Learn about ethical and practical arguments in favor of and against cloning.
- Create a public service campaign for one argument.

### ***Materials***

- Discovery School video on *unitedstreaming: The Clone Age*  
Search for this video by using the video title (or a portion of it) as the keyword.

Selected clips that support this lesson plan:

- Part One: The Clone Age
  - Medical Beneficial Opportunities of Cloning
- Part Two: The Clone Age
  - Cloning Organs for Transplant
  - The Ethics of Human Cloning
- Research materials
- Computer with Internet access
- Art materials

### ***Procedures***

1. Begin the activity with a general discussion of the ethical and practical arguments both for and against cloning. You may start off by citing arguments on both sides of the issue.

FOR: Cloning could be a good source for blood, organ, and bone marrow transplants. Scientists gather important information about human personality development by studying twins, who could be produced by cloning. Animals from endangered species could be cloned to prevent extinction. Cloning livestock animals could be financially beneficial to farmers.

**AGAINST:** Tampering with nature may create disastrous consequences. For example, the technology could be used to create human “guinea pigs” for scientific experiments or slaves—both inhumane purposes.

2. Tell each student to decide which side of the issue to support. Remind them that persuasive images and language are effective tools for swaying public opinion. Students should then plan their public service advertisement campaign.
3. Encourage students to use attention-grabbing images and snappy, informative language in their ads. Suggest that they find examples of such images and language in other public service advertisements, such as those discouraging cigarette smoking. (See examples at <http://www.tobaccofreekids.org> and <http://www.badvertising.org>.) Point out that their ad campaigns may be posters, buttons, pamphlets, television or radio spots, or advertisements in magazines or newspapers.
4. Have students think through their arguments carefully and list what they believe to be the strongest points.
5. Allow class time for students to use the lists to create their ad campaigns.
6. Allow class time for all students to present their ad campaigns.
7. Invite the class to choose the three or four ad campaigns that are the most effective, regardless of the argument.
8. Discuss what makes these ad campaigns effective. Is it the compelling logic of the arguments, the persuasive quality of the language, or the forceful quality of the images?

### Assessment

Use the following three-point rubric to evaluate students’ work during this lesson.

- **3 points:** Students presented compelling and logical arguments, effectively using persuasive language and forceful visuals.
- **2 points:** Students presented logical arguments, sufficiently using persuasive language and adequate visuals.
- **1 point:** Students presented weak arguments, insufficiently using persuasive language and inadequate visuals.

### Vocabulary

#### clone

*Definition:* A genetically identical cell or organism

*Context:* Two human clones would have the same genetic structure, but they would probably have different personalities.

#### ethical

*Definition:* Relating to or involving questions of right and wrong

*Context:* The idea of cloning humans and other animals raises ethical and moral concern.

**genes**

*Definition:* The building blocks of DNA, which serve as transmitters of hereditary characteristics

*Context:* Genes control the transmission of hereditary traits in living beings.

**genetic engineering**

*Definition:* The process of altering a living being's genes to create a desired effect

*Context:* Genetic engineering may produce a redder tomato, a taller giraffe, or a cow that gives more milk.

**nucleus**

*Definition:* The control center of a cell

*Context:* A cell's genetic information is contained in its nucleus.

**transgenics**

*Definition:* The process of replacing the nucleus of one animal's cell with the nucleus of a different animal's cell

*Context:* Transgenic scientists have inserted a human nucleus into a sheep cell.

**Academic Standards**

**National Academy of Sciences**

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following science standards:

- Life Science: Structure and function in living systems; Reproduction and heredity

**Mid-continent Research for Education and Learning (McREL)**

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit link:

<http://www.mcrel.org/compendium/browse.asp>

This lesson plan addresses the following national standards:

- Science – Life Sciences: Understands the principles of heredity and related concepts
- Language Arts – Writing: Uses the general skills and strategies of the writing process, Gathers and uses information for research purposes
- Technology – Understands the relationships among science, technology, society, and the individual



## **Support Materials**

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>

