



Gold Seal Lesson

Author(s): Sandra M. Latourelle			Lesson Title: It's Not Nice to Copy...Or Is It?			
Grade Span			ICLE Application Model			
K-4	5-8	9-12 X	A	B	C	D X

Instructional Focus:

Speaking

Students speak for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

Basic Concepts and Knowledge

Students develop an understanding of scientific concepts using facts, theories, principles, and models.

Habits of Mind

Students develop habits of mind including curiosity, open-mindedness and persistence.

Communication

Students communicate and apply scientific concepts.

Science in Personal and Social Perspectives

Students apply scientific principles to personal and social issues.

Performance Task

The scenario is as follows: You have been called upon to advise the heads of state on the practice and ethics of human cloning. In the context of such a challenge, you will use on-line resources and an understanding of genetics to evaluate the scientific, ethical and social implications of human cloning. Each of you will be assigned to one of four Teams. With your team you will research the questions laid out for you (see Team Question Sheet at the end of this lesson). Once the research is done, you will form groups of four composed of a member from each Team. These Advisory Committees will discuss findings and develop a presentation for the President. A spokesperson from each Committee will present to the class the key points you want to tell the President. Presentations are limited to ten minutes.

Items For Consideration

1. You will need to obtain a marbled composition book to use as a journal for the upcoming project on cloning. (These are very inexpensively available at local dollar and discount stores). A set of instructions is included for how to use the journal. Your first Journal task is called "Day One."
2. Research will be both on an individual and team basis, and the final project will involve collaboration and consensus building.
3. You will receive the "Project Prospectus." I, as the President's special liaison for the study of Human Cloning, will assist you in your mission for the President.
4. Please read through the "Project Prospectus" making sure you understand your task. You will be randomly separated into the four research teams, "Operation: Biotechnology," "Operation Genome," "Operation DNA Replication" and "Operation Nucleotide." Each team will receive the appropriate research questions as provided at the end of this lesson.
5. You may be guided through the first of the bookmarks provided, in order to make sure that you have no difficulty opening the bookmark file and utilizing it with the web browser. This is a research project specifically geared to the Socratic method, allowing YOU to seek the answers, and hopefully even more questions. The book marked files are merely a starting point for you. It is entirely possible you will find more and better resources to answer and complete your team's questions/tasks.
6. At the end of the designated research periods, all team members will gather together back in the classroom. Armed with the information needed you will answer your teams' questions. You will then serve on Presidential Advisory Committees. You will form four-member Advisory Committees by joining one member from each of the Research Teams. You will have two class periods to come together and pool the information you've gathered and determine the important information for a 10-minute presentation. It is through this collaboration that your entire team will put together the most concise and complete presentation of your findings for the "President." You should avoid spending a lot of time in presentation for persuasive argument; you are an advisory body only, providing information for the President's own decision-making process.

Performance Task continued...

If you wish, you will be provided with oak tag or poster board to post some of the more pertinent questions as a visual aid for your presentations.

**TEAM NAME:
OPERATION BIOTECHNOLOGY**

Your team's questions/tasks are:

1. How are organisms cloned?
2. What kind of impact do you foresee cloning having both on science and for society?
3. Please list some advantages and/or benefits that would be possible with the use of cloning.
4. Describe the cloning process for a human.
5. Are organisms classified as asexual reproducers already cloning themselves?

**TEAM NAME:
OPERATION GENOME**

Your team's questions/tasks are:

1. How are organisms cloned?
2. Has a human clone ever been created?
3. Compile a list of possible uses and consequences of human cloning.
4. According to your research, what do you consider to be the greatest ethical and moral considerations of cloning?
5. Describe some of the portrayals of human cloning in media (movies, novels, TV, etc.) What effect might these portrayals have on public opinion?

**TEAM NAME:
OPERATION DNA REPLICATION**

Your team's questions/tasks are:

1. How are organisms cloned?
2. Do you believe that the evolutionary process would be impacted by long term cloning? Why?
3. What is the most complex organism cloned by scientists to date? How was it done?
4. Make a list of the disadvantages of human cloning.
5. How are the genes passed to a clone similar to or different from an offspring produced naturally?

**TEAM NAME:
OPERATION NUCLEOTIDE**

Your team's questions/tasks are:

1. How are organisms cloned?
2. Do scientists now have the capability to clone humans?
3. Based on your research, do you see major government funding for human cloning research on the horizon? Why?
4. Why do you believe there is such emotional polarity on the cloning issue?
5. According to your research, what do you feel are the greatest ethical and moral considerations of cloning?

JOURNAL ENTRY FOR SITE VISITS

To ensure that your conclusions for this project are based on sound web-based sources of information, a journal entry checklist has been constructed for you. Please fill out the information for the site you are utilizing in your conclusions. Clip the left side of this page and paste or tape it into your journal; your journal will be handed in for evaluation at the conclusion of the project. **YOU MUST HAVE AT LEAST 4-6 SITES LISTED FOR YOUR DATA TO BE ACCEPTABLE.**

Site Name _____

Site Address (URL) _____

Circle One after each question Y= Yes S=Somewhat N=No

Performance Task continued...

Does this site present both sides of the issue? Y S N
Why?

Does this site have an obvious bias to one viewpoint? Y S N
If so, is it appropriately presented?

Are sound bodies of research used to bolster the site's stand on the issue?
Please list some below. Y S N

Is the information presented in a clear, easy-to-read fashion? Y S N

Your Web Site Rating for this site: 3 2 1 0

ASSESSMENT RUBRIC FOR WEB SITE JOURNAL ENTRIES

The following will give you guidelines in deciding just how appropriate the websites you've chosen to back up your conclusions are for the Human Cloning Project. Some sites may meet the criterion for two of the journal questions, but be weak in one of the other areas. Use your judgment to determine if the site is worthy of noting for your research.

3	Excellent – This web site is balanced (if bias is present, its foundation is solid, and opportunities to examine both sides of the issue are made available either through the website itself or hotlinks to other sites); contains solid and reputable resources; presents the information in a clear, concise and compelling manner.
2	Somewhat – This web site tries to present both sides of the issue [if bias is present, there is an acknowledgement of the opposing viewpoint(s)]; some of the information presented is bolstered by good sources; the information within is presented fairly, and follows clear, logical arguments.
1	Poor – This website presents only one side of the issue in question, with no acknowledgement of or respect for opposing views; the information is not supported by reputable sources, falling almost into the realm of opinion or hearsay; the information presented is difficult to follow and vague.
0	Unsafe – This site does not meet the requirements of sound, responsibly cited information.

Bookmarks:

The following sites have been book marked and saved on disk for you to utilize in a computer lab, library or other area with multiple access to the Internet:

“Cloning Human Beings” – Report and Recommendations of the National Bioethics Advisory Committee, Rockville, Maryland, June 1997

<http://bioethics.gov/pubs/cloning.pdf>

You will need the Adobe Acrobat Reader plug-in in order to read this file, but it is absolutely free and easily downloaded, and will be very helpful in other research you do.

THE CLONING PROCESS

<http://www.cs.virginia.edu/~jones/tmp352/projects98/group1/how.html>

Cloning Issues in Reproduction, Science and Medicine (issued January 1998)

http://www.dti.gov.uk/hgac/papers/papers_c.htm

Bookmarks continued...

HUMAN CLONING FOUNDATION

<http://www.humancloning.org>

SCIENTIFIC AMERICAN: EXPLORATIONS: A CLONE IN SHEEP'S CLOTHING

<http://www.sciam.com/explorations/030397clone/030397beards.html>

CLONING – ARE HUMANS NEXT?

<http://www.worldbook.com/fun/bth/cloning/html/cloning.html>

Extensive entries on the issues of cloning, including "What is a clone?" "Early scientific attempts at cloning," "Dolly and other cloning breakthroughs since 1996," "Uses of cloning," "Ethical concerns," and "Other web sites" related to cloning.

HUMAN CLONING PLANS

<http://www.npr.org/news/health/980106.cloning.html>

American scientist Richard Seed tells NPR's *All Things Considered* that he and his colleagues are set to begin work on human cloning within the next 90 days. In an interview, NPR's Science Correspondent Joe Palca reports that Seed and some Chicago-area doctors have the skills and equipment to make an attempt at the procedure, which they plan to offer to infertile couples wishing to have children.

REQUIRES REAL AUDIO PLUG IN.

YAHOO! FULL COVERAGE: CLONING ISSUES

http://headlines.yahoo.com/Full_Coverage/Yahooligans/cloning_Issues

An excellent resource for K-12 students dealing with news stories and related websites on the subject of cloning.

HMS BEAGLE BESIDE OURSELVES: THE CLONING POLL

<http://www.biomednet.com/hmsbeagle/48/recroom/topten.htm>

The results of an online poll whether or not to clone human beings as presented by the HMS Beagle, an online science 'magazine'. Students will be prompted to register on the HMS Beagle website, which is totally free.

Performance Task Continued...

CLONING JOURNAL INSTRUCTIONS

This journal will serve as a chart for your journey through your research project on human cloning. It should not only help you keep track of where you are going and where you have been, but will help to assess your resources which will be used in the culminating project, a 10-minute presentation. Your journal entries must be done in a marbled, 10" x 7 7/8" Composition book, which you'll find very inexpensively in dollar or discount stores. You will record an entry in your journal at the end of each class research and study period during the project. I will collect these at the end of the project for grading, and they will be returned to you.

All entries need to be dated to help keep an ongoing record of the research project. Although your journal will not be graded strictly on content, you will receive points for each entry. There will be guided questions for your reflection, but primarily this journal will be used for your training as web site evaluators. You will receive a rubric telling you the best aspects of reliable web sources. Your job will be to assess each website you visit and intend to use as resources for your presentations at the end of the project. Feel free to write additional entries, even when specific topics are assigned.

SPECIAL INCLUSIONS

Day One (*This entry should be a bit longer than one or two sentences!*)

Do you think human cloning is a good thing? Why, or why not?

Would you like to have been a clone? Why, or why not?

Mid-Research

Do you think medical research on cloning should be allowed to continue? Why?

End of the Project

Re-read your very first entry. In what ways, if any, has your opinion of cloning and its potential benefits and detriments changed? Be specific.

Performance Task continued..

Open Date (You choose)

A description of at least one "Great Research Moment!" Watch out for that AHA! Feeling. It happens when you least expect it, when you suddenly make a connection with the materials, or some idea or concept that has eluded you becomes clear. Record this great moment during your research in your journal! If you didn't experience a "Great Moment," you'll need to write a paragraph or two explaining why you think the 'great moment' passed you by.

Don't forget to use your Web Site Assessment forms and paste them into your journal for every site you plan to utilize during your final presentation.

Culminating Activity:

You may either choose a spokesperson from each Advisory Committee, or draw names. *A bit of added excitement might be to invite the Building Principal to come in a play the part of "The President."* Depending upon the size of your class, presentations should take 2-3 class periods.

Community Connection:

At the end of the project, you may want to conduct a survey of the class, or perhaps the entire school, to determine the school community's viewpoint on human cloning. After the results are tabulated, you should graph the results using both a pie chart and a bar graph.

You may wish to build an informational website for the school's science department web page containing transcripts of each of the presentations. Freeware and Shareware such as HTML Assistant can aid in the web-building process.

By utilizing one of the free World Wide Web listserv sites, such as ONEList or Topica, you may construct a listserv open to the public to garner public opinion on the subject of Human Cloning

Teams may also write an article for the school newspaper or website based on their research into the ethical implications of human cloning.

Teacher Notes:

It would be wise to take the time to have your students visit the "Columbia Guide to Online Style," at http://www.columbia.edu/cu/cup/cgos/idx_basic.html providing up to date citing examples and guidelines for citing sources from the Internet and the World Wide Web.

ICLE Essential Skills

Prepare and deliver individual speeches by gathering information, rehearsing, making eye contact, speaking loudly enough, delivering information in a well-organized fashion, and appealing to the needs of the target audience. (ela 10)
Gather information from a variety of sources, including electronic sources, and summarize, analyze, and evaluate its use for a report. (ela 3)
Present information in well-organized fashion that will be clear to the target audience. (ela 11)
Make informed judgments about topics under discussion such as current events, literature, movies, or plays. (ela 36b)
Use writing as a tool for learning in formats such as learning logs, laboratory reports, note-taking, journals and portfolios. (ela 40)
Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change. (Not Ranked s116)
Examine the foundations of genetics involving heredity and inherited traits passed on through generations, understand the gene-chromosome concept, and apply classical genetic studies (Mendelian genetics). (s 12)
Understand that sexual reproduction involves the union of special sex cells that are usually produced by two separate parents with half of the genes coming from each parent allowing for a high degree of genetic diversity. Most plants and animals use sexual reproduction. (s 14)
Understand that asexual reproduction involves the production of offspring from a single parent organism with all the genes coming from that parent. Asexual reproduction occurs with unicellular organisms and some plants. (s 63)
Explore the chemical basis for genetics by examining genes, gene mutations and mutagenic agents, and the benefits and drawbacks of genetic engineering. (s 83)

Scoring Guide:

Here are several scoring guides that may be used or assist in development:

SPEECH EVALUATION RUBRIC

NAME _____

**CONTENT
DELIVERY**

INTRODUCTION (5 POINTS)

Attention-getting material:
Orienting material:
Need step:
Relevancy to central idea:
Transition sentence:

VOICE (10 POINTS)

Natural conversational manner:
Vocal variety:
Projection:
Rate:
Animation/enthusiasm:

INFORMATION (8 POINTS)

Interesting:
Developing of central idea:
(supporting material, psychological appeals and length)
Documentation of sources:
(credibility)

EYE CONTACT (10 POINTS)

Directness:

ORGANIZATION (7 POINTS)

Issue arrangement:
(organized to meet time limit)
Transitions:
Comprehension: (logical statements):

BODILY ACTION (5 POINTS)

Gestures:
Facial expression:
Posture:
Movement:
Animation/enthusiasm:

CONCLUSION (5 POINTS)

Summary:
Clincher:
USE OF AIDS (The absence of an aid will lower the grade 10 points.)
Relevancy to central idea:
Handling of aids:
Appearance of aid, if visual:

TIME:

GRADE:

(TOTAL: A=50 - 45, B=44 - 40, C=39 - 35, D=34 - 30)

Presentation Rubric

Attributes
Above Standard
At Standard
Attribute Still A Goal
Attribute Points Earned

(5-4.5)
(4.5-3.5)
(3.5-0)

Resource Utilization

Utilized all resources described on Information Sheet to acquire info; incorporated info into presentation
Utilized some resources described on Information Sheet to acquire info; incorporated information into presentation
Utilized few or no resources described on the Information Sheet to acquire information into presentation
/5

(10-9)
(9-7)
(7-0)

Topic Discussion

Informed when speaking (without reference to notes) about the material.
Informed when speaking about the material while referencing notes.
Unable to accurately discuss information related to topic or simply read information from paper.
/10

(10-9)
(9-7)
(7-0)

Visuals & Supplementary Materials

Oral report included computer-generated and/or hand made visuals (clip-art, graphs, tables, charts), and was presented with multimedia software that enhanced presentation.
Oral report included computer-generated and/or hand made visuals (clip-art, graphs, tables, charts) that enhanced presentation, but was not presented with multimedia software.
Oral report did not include visuals or supplementary materials or materials used did not enhance presentation.
/10

(15-13.5)
(13.5-10.5)
(10.5-0)

Powerpoint or Web Page Utilization

Created pages accurately reflect the groups data, results and rational. It is organized in a way that enhances the reader's ability to understand the information, data and results.
Created pages accurately reflect the groups data, results and rational. It is organized in a way that allows the reader to understand the information, data and results.
Created pages are incomplete, missing or do not get across the group's information, data and results.
/15

Total Presentation Points Earned
/40

Scoring Guide continued...

Oral Presentation: Observation Checklist

Name: _____ Date: _____

Observer: _____ Presentation: _____

Criteria
Check if observed

Organization

includes introduction, development of ideas, and conclusion
uses an effective and interesting opening
places ideas in clear, concise, and logical order
uses transitions and repetition to keep the audience on track

Content

clearly defines and explains subject and central message
stays focused on subject throughout the presentation
supports subject and central message with details and examples

Overall Delivery

uses style of delivery appropriate to topic, purpose, and audience
is sensitive to audience reaction and adapts delivery to meet audience needs
effectively handles questions and answers from the audience well

Language

uses effective vocabulary and clear language appropriate for purpose and audience
uses grammatically correct sentences
uses correctly the language structures of Canadian English

Voice

speaks audibly and adjusts volume and pitch as required
enunciates clearly and pronounces words correctly
speaks with appropriate pace and speed
uses inflection to convey importance of main points and enthusiasm for subject

Body Language

addresses entire audience and makes eye contact
uses gestures appropriately
maintains appropriate posture

Support

uses visual and audio aids appropriately

Project Presentation Evaluation: Name(s): _____

Criteria

D
C
B
A

Presentation skills: voice, body language, style

monotone, lack of enthusiasm, minimal eye contact, stumbles over words, unpolished
some expression and eye contact, limited enthusiasm, little audience involvement, transitions not smooth
expressive and strong voice, shows enthusiasm, involves audience, smooth and well rehearsed
highly polished presentation skills; provokes thought and participation

Scoring Guide continued...

Organization

very limited opening and/or closing; limited development of one or more parts of the presentation; no clear sequence of ideas

opening and closing are somewhat effective; some development of most of the parts of the presentation; some coherence in sequencing of ideas

effective opening and closing; development of all of the parts of the presentation; coherent sequencing of ideas
opening and closing are highly effective; thorough development of all of the parts of the presentation; thoughtful sequencing and integration of ideas

Creativity - effectiveness in use of media and/or technology

limited use of posters, diagrams, overheads etc.

some use of posters, diagrams, overheads etc.

use of several of: posters, overheads, samples, demonstrations, videos, computer-based presentation tools etc.

effective integration of posters, overheads, samples, demonstrations, videos, computer-based presentation tools

Quality of Information/ ideas

shows understanding of only few aspects; teaches little significant scientific information for this grade;

provokes limited audience response; answers questions in limited manner

shows understanding of some aspects; teaches some significant scientific information for this grade; provokes some audience response; answers only concrete questions effectively.

thorough and broad understanding of the topic; teaches significant scientific information and concepts for this grade;

provokes some thoughtful audience response; answers almost all concrete and abstract questions effectively

thorough, broad, insightful understanding of the topic; teaches significant scientific information and concepts at and

beyond this grade; provokes thoughtful audience response; answers almost all questions and extends audience responses effectively and with ease

This rubric could be used to evaluate how students perform at each stage of their research cycle.

1. PLANNING

____ 4 I Made really good use of my time. I was able to remain focused on the tasks and make changes when I needed to. I was able to develop a clear method to organize my information. I was able to make revisions in my plan when needed.

____ 3 I was able to work within the time frame my teacher gave me. I was able to develop a system to organize my information. I was able to make revisions with help from my teacher.

____ 2 I needed teacher help to list and organize what I needed to do. There are some steps missing in my planning. I made revisions with teacher help.

____ 1 I was unable to come up with an organized plan and work within the time limits.

2. GATHERING

____ 4 I used a variety of resources and carefully selected only the information that answered my question. I was able to continually revise my search based on information I found.

____ 3 I used many resources to find information that answered my question. I tried at revising my search, but had some problems doing so.

____ 2 I used 1 or more sources. Original question or focus guided my search, although I should have made revisions. I made errors in selection of references.

____ 1 I lost focus during the gathering process and therefore my information was not accurate and complete.

Scoring Guide continued...

3. SORTING

____ 4 I thoroughly selected and organized information that answered my question in an organized way. I selected information that was appropriate.

____ 3 I sorted information and organized information that answered my question without too many errors.

____ 2 I tried to organize the information I found, but I made some mistakes. I wasn't able to completely stay focused on information that would answer my question.

____ 1 I was unable to sort and organize the information I found to answer my question.

4. SYNTHESIZING

____ 4 I used the information I found in a meaningful way to create an original product that clearly answers the question with accuracy, detail and understanding.

____ 3 My product answers the question in a way that reflects learning using some detail and accuracy.

____ 2 My product is not complete and only answers part of the question.

____ 1 My product is incomplete and contains missing details and it isn't completely accurate.

Keywords

English Language Arts	Mathematics	Science
Reading	Algebra	Earth Science
Writing	Geometry	Life Science Biology DNA Genetics Reproduction Technology
Communications Audience Body Language Communication Oral Presentation	Statistics	Chemistry
Literature	Calculus	Physics
Other	Trigonometry	Other
	Other	

Picture, Chart, or Graph file name(s):



HUMAN CLONING: SPECIAL ADVISORY COMMITTEES

The Senate Subcommittee on the Ethical Issues of Human Cloning has asked you to help shed some light on the technological challenges and ethical dilemmas regarding human cloning. Senate aides have compiled lists of questions they want answered at your meeting with the President and his advisors. Answer each question on your list as accurately as you can.

Before your big day at Capitol Hill we will spend some time researching the issue. Internet resources will be particularly useful for gathering information on the science and ethics of human cloning since it is a relatively recent issue in the public forum. As always, be wary of on-line sources. There are no established editors or fact checkers policing the World Wide Web. YOU, however, will be armed with an assessment tool to help you become a wise and canny web evaluator. For after all, web pages carry vast amounts of knowledge and useful information for you to bring up during your presentation to the President. Good Luck!