



**Instructor:** Melissa Rodriguez (2003 Science Teacher Workshop participant)

**School District:** South Amboy

**Lesson Title:** Radiation exposure in medical procedures

**Grade:** 8

**Subject:** Human Biology

**Overview:** The students will complete semi-guided research in groups of 4 on radiation exposure during medical procedures, write a report with sources, and present an oral presentation

**Objectives:** Students will be able to describe how specific medical procedures are carried out, their accuracy in diagnosis, statistics of lives saved by the procedure and level of radiation exposure.

Materials and Resources:

- Rubrics for written and oral reports
- Student information sheet
- <http://www.umich.edu/~radinfo/introduction/risk.html>
- <http://www.cancer.org/docroot/home/index.asp>
- <http://www.fda.gov/cdrh/mammography/index.html>
- <http://www.hps.org/>
- <http://www.dis-tenet.com/Procedures/nuclear-medicine.htm>

**Procedure:**

- Students will be placed in groups of 4. Student information and requirement sheets will be given.
- Each group will be assigned a medical procedure to research. (chest x-ray, head CT, barium enema, mammogram, radio-iodine treatment, dental x-ray, hand x-ray)
- The class will be given a 45 minute class session in the computer lab to jumpstart the research with teacher assistance.
- Each group will turn in a research paper (sources must be cited).
- Oral presentations to be presented by groups to entire class.

Name: \_\_\_\_\_  
Science Grade 8 St. Mary School

Date: \_\_\_\_\_  
Mrs. Rodriguez

### Radiation in Medical Procedures – Research Project

Every student is assigned to a group for the completion of project requirements. Groups will not be changed, so make an effort to work well with your partners (all students are to be actively working with their group). There will be two grades assigned for this project. The research report will be graded on a rubric and each group member will receive the same grade. The oral presentation will also be graded on a rubric and each group member will receive the same grade. Copies of the rubric scoring are attached.

#### 1. Research Report:

- The report must include a cover page and bibliography. All sources must be listed. You may use books or internet sources. The report must be 4 pages long (not counting the cover page or bibliography). Use .6" margins all around. Use 14 font, Times New Roman. You may include a picture (list the source).
- Use at least 3 sources for your research. You will be researching an assigned medical procedure. The medical procedure causes a patient to have exposure to radiation. The following data must be included in your research:
  - a brief description of the equipment used in the procedure,
  - how accurate results are,
  - the estimated number of lives that are saved per year by the procedure,
  - the level of radiation a patient is exposed to during the procedure, and
  - the potential health hazards due to treatment.
- The conclusion of the project should include a comparison (pros and cons) of the benefits vs. risks of the procedure.

#### 2. Oral presentation:

All students must participate in the presentation. The transition from one speaker to the next should be a smooth. Index cards should be used to help keep presentation organized, not to be read off of. The presentation should last from 5 to 10 minutes. Presentations that are longer or shorter will lose points. This is not a presentation of all of your research. The oral presentation should concentrate on the statistics and pros and cons of treatment. Be prepared to answer questions from your peers.

Research Report Rubric – Mrs. Rodriguez

Name: \_\_\_\_\_  
Date: \_\_\_\_\_  
Grade: \_\_\_\_\_  
Report Title: \_\_\_\_\_

	3	2	1
Comp. of topic			
Idea Development			
Organization			
Language Usage			
Mechanics			
Format			
Cover/Source pages			

Comments:

Research Report Rubric – Mrs. Rodriguez

Name: \_\_\_\_\_  
Date: \_\_\_\_\_  
Grade: \_\_\_\_\_  
Report Title: \_\_\_\_\_

	3	2	1
Comp. of topic			
Idea Development			
Organization			
Language Usage			
Mechanics			
Format			
Cover/Source pages			

Comments:

Research Report Rubric – Mrs. Rodriguez

	3	2	1
Comprehension of topic	Writing indicates an excellent understanding of the topic. Reflects use of a range of resources.	Writing indicates a satisfactory understanding of the topic. Reflects the use of one or more resources.	Writing indicates a limited understanding of the topic. Contains factual errors and may be missing critical information. Reflects a lack of resources used.
Idea Development	Develops relevant ideas clearly and fully. Information focuses on the topic. Details, examples, anecdotes, or personal experiences explain and clarify the information.	Develops ideas satisfactorily with adequate details, examples, anecdotes, or experiences.	Develops ideas incompletely with few or no supporting details. Some information may be unrelated to the topic. Information may be copied from a book without attribution.
Organization	Organizes information logically in paragraphs. Includes an effective introduction and ending that engage the reader.	Organizes information in an acceptable order that is easy to understand. Paragraphs may be used inconsistently.	Presents ideas with little or no organization.
Language Usage	Uses lively and descriptive language. Details, anecdotes, and examples explain and clarify information. Varies sentence structure.	Uses some descriptive language. Demonstrates some sense of sentence variety.	Uses limited vocabulary. Uses repetitive, simple sentences.
Mechanics	Writing shows few errors in basic language conventions.	Limited errors in basic language conventions do not interfere with meaning.	Shows many errors in conventions, but still conveys some meaning.
Format	Format was followed completely.	Format was mostly followed.	Format was barely followed if at all.
Cover page, bibliography	Includes both pages.	Includes one or the other.	Neither included.

Science Oral Presentation Rubric – Mrs. Rodriguez

Name: \_\_\_\_\_  
Date: \_\_\_\_\_  
Grade: \_\_\_\_\_  
Project Title: \_\_\_\_\_

	5	4	3	2	1
General Presentation					
Duration					
Content Knowledge					
Use of Index Cards					
Group cohesiveness					

COMMENTS:

Science Oral Presentation Rubric – Mrs. Rodriguez

Name: \_\_\_\_\_  
Date: \_\_\_\_\_  
Grade: \_\_\_\_\_  
Project Title: \_\_\_\_\_

	5	4	3	2	1
General Presentation					
Duration					
Content Knowledge					
Use of Index Cards					
Group cohesiveness					

COMMENTS:

Science Oral Presentation Rubric - Mrs. Rodriguez

	5	4	3	2	1
General Presentation	Speech is clear. Eye contact is made. Grammar is conventional. Volume is appropriate.	Speech is clear. Eye contact is made intermittently. Grammar usually correct. Volume appropriate.	Presentation lacks enthusiasm. Speech is adequate. Lapses in sentence structure and grammar.	Presentation shows lack of interest. Speech is difficult to understand. Lack of eye contact.	Lacks focus. Grammatical errors. No eye contact.
Duration	Length of presentation is 5 –6 minutes.	Length of presentation is 4 minutes.	Length of presentation is 3 minutes.	Length of presentation is 2 minutes.	Length of presentation is 1 minute.
Content Knowledge (Includes question and answer period)	Knowledge and facts are included and correct.	Knowledge and facts are partially included and/or partly correct.	Facts not included.	Knowledge is minimal.	Lacks information.
Use of Index Cards	Index cards are used only to guide presentation.	Index cards used several times for basic facts.	Index cards used as reading source.	Use of a sheet of paper instead of index cards.	Presentation was read from sheet of paper.
Group cohesiveness	Presentation is well organized and flows smoothly, without problems among group members. All members participated.	Presentation is disorganized, but group members worked well together. All members participated	Presentation is disorganized, members have some problems working together. All members participated	Presentation has no organization, and arguments are evident among group members. Only 2 or 3 members participated.	Presentation has no organization, only one member participated.