**Selecting a Harbor: Oceanography and the Impact of Oil Spills**

**Project Summary**

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| [**Scenario**](http://ed.fnal.gov/linc/fall96/projects/jmueller/SCEN.HTM) | [**Student Pages**](http://ed.fnal.gov/linc/fall96/projects/jmueller/STDPG.HTM) | [**Project Timeline**](http://ed.fnal.gov/linc/fall96/projects/jmueller/TIMELINE.HTM) |

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| [**Go to "National Standards"**](http://ed.fnal.gov/linc/fall96/projects/jmueller/present.htm#National%20Standards) | [**Go to "Learner Outcomes"**](http://ed.fnal.gov/linc/fall96/projects/jmueller/present.htm#Learner%20outcomes) |

**Subject/Content Area:** Science- oceanography, marine biology, ecology ; Math- estimation, measurement, problem solving . Included as an interdisciplinary unit: Language Arts- persuasive writing, letter writing, research skills; Geography- map skills.

**Project Goals:** Using an [interdisciplinary](http://www.ncrel.org/sdrs/areas/issues/content/cntareas/math/ma4inter.htm) approach to engage students in [cooperative learning](http://transition.alaska.edu/www/DOE/langarts/2strtpnt.htm#technology) structures using problem-solving, inquiry-based laboratory investigations, and research skills pertaining to decisions influencing the selection of three new sites for oil-shipping terminals as outlined in [Oil Spill!](http://www.mcps.k12.md.us/departments/eventscience/ebs.OilSpill.html) an [Event-Based Science](http://www.mcps.k12.md.us/departments/eventscience/) module written by Russell Wright, published by Addison-Wesley. The basic *Oil Spill!* program is not dependent on Internet access. However, the use of the Internet is required for current research data and e-mail communication with corresponding experts to students' assigned roles and incorporates the use of current technology into the program. Communication with schools in coastal regions affected by oil spills would be beneficial but is not required.   
  
**Alignment with** **National Standards:** for math and science only - This project demonstrates elements of the [National Science Education Standards](http://www.nap.edu/readingroom/books/nses/html/) and [NCTM Standards](http://www.enc.org/online/NCTM/280dtoc1.html)**Science**[Teaching Standards A,B,C,D,E](http://www.nap.edu/readingroom/books/nses/html/3.html#tsa)[Assessment Standards A,B,C,D](http://www.nap.edu/readingroom/books/nses/html/5.html#asa)[Content Standards A,C,D,E,F,G](http://www.nap.edu/readingroom/books/nses/html/6d.html)[Program Standards A,B,C,D,E](http://www.nap.edu/readingroom/books/nses/html/7.html#sp)

**Math**[Standards 1,7,10,13](http://www.mcrel.org/standards-benchmarks/standardslib/math.html)

[Back to the top of the page](http://ed.fnal.gov/linc/fall96/projects/jmueller/PRESENT.HTM)Project Time Frame: Students will explore the earth science concepts of oceanography and life science concepts of ecology while involved in this unit. Math skills associated with problem-solving,estimating, and measuring are necessary to evaluate the problem/scenario. The project will encompass a minimum of 25 -30 class periods. The [Project Timeline](http://ed.fnal.gov/linc/fall96/projects/jmueller/TIMELINE.HTM) could be expanded if interest is high or if done as an interdisciplinary unit.

**Target Audience:** Includes a grade range of 6-9 . This project is appropriate for all ability levels including heterogeneous groupings with inclusion as well as gifted clusters.

**Learner Outcomes:** for math and science only  
1. Use their knowledge of earth science concepts to solve an authentic problem and position relative to an issue.  
2.Use [scientific inquiry](http://www.nap.edu/readingroom/books/nses/html/6d.html) skills in science lab activities  
3. Demonstrate the ability to interpret data, estimate, measure, and problem-solve  
4. Demonstrate the ability to collect data/ information using various technologies  
5.Effectively communicate the results of the group's research orally, visually and/or in writing.  
[Return to the top of the page](http://ed.fnal.gov/linc/fall96/projects/jmueller/PRESENT.HTM)Assessment of Students: Student performance is continually assessed throughout the project. Much of the assessment takes the form of informal teacher observation of the students. Each teacher engages in informal conversation and questioning of students to determine the depth of their understanding. Each teacher also reviews the data collected by the students to check its validity. As a final assessment activity, the teachers will complete the [assessment rubric](http://ed.fnal.gov/linc/fall96/projects/jmueller/RUBRIC.HTM) for each child. The teachers will work together during their daily team planning period to complete the rubric.

**Evaluation of Project:**Evaluation of this project will be conducted and reported at this site when the students have completed the simulation. In evaluating the project, the following curriculum requirements will be reviewed:  
\*\*Does it utilize cooperative learning?  
\*\*Is it interdisciplinary?  
\*\*Is it problem and process based?  
\*\*Is it relevent and does it involve the real world?  
\*\*Is it student centered?  
\*\*Is it hands on and active?  
\*\*Is it student and teacher directed?  
\*\*To what extent is technology used?  
\*\*Are there other aspects of technology to incorporate in this project?

Another part of the evaluation will involve the students and their journal entries. On selected days the teacher can [prompt](http://ed.fnal.gov/linc/fall96/projects/jmueller/PROMPTS.HTM) the student reflection by posing specific questions.

http://ed.fnal.gov/linc/fall96/projects/jmueller/GRAPHICS/BAR.GIF

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http://www-ed.fnal.gov/linc/fall96/projects/jmueller/!present.htm*