“NASA Simulations”

DESCRIPTION
Students will use NASA web-based simulators to follow sequenced directions and complete ordered tasks while learning how the shuttle is made ready for flight, how the shuttle docks with the International Space Station, how the shuttle lands, and how NASA retrieves the solid rocket boosters.

OBJECTIVES
Students will:
- Follow given directions throughout the simulation media to complete the proper sequences
- Incorporate the use of technology when presented with various simulated situations

NATIONAL STANDARDS

National Science Education Standards (NSTA)
Science in Personal and Social Perspectives
- Risks and benefits
- Science and technology in society
History and Nature of Science Standards
- Science as a human endeavor
- Nature of science
- History of science

ISTE NETS and Performance Indicators for Students (ISTE)
Creativity and Innovation
- use models and simulations to explore complex systems and issues
Critical Thinking, Problem Solving, and Decision Making
- collect and analyze data to identify solutions and/or make informed decisions

MANAGEMENT
Practice the simulations at the resource website to familiarize yourself with each simulator activity. You will need a computer with internet access for each pair of students and each computer will need to have the latest version of Macromedia plug-ins.

CONTENT RESEARCH

Multimedia: – the combined use of several media, as sound and full-motion video in computer applications.

Simulation: the representation of the behavior or characteristics of one system through the use of another system, especially a computer program designed for the purpose. In the mission simulator section, students will be able to launch or land a Space Shuttle, and dock with the International Space Station.
**DISCUSSION QUESTIONS**

- Were you able to complete each simulation mission successfully? *Answers will vary.*
- What were the most challenging parts of the simulations you completed? *Answers will vary.*
- How important was it to follow the instructions in the proper order? *Following directions is a requirement to successfully complete a simulation.*
- How would a failure to follow the instructions affect the astronauts and the spacecraft they are using? *Answers will vary.*

**MATERIALS**

- Computers with internet access

**ASSESSMENT ACTIVITIES**

Observe and record students’ successes in the use of technology and the simulation interface to complete each mission. Journaling is a valuable tool for explorers as they simulate and perform complex actions in the course of exploration. Students should record their simulation sessions in a journal, noting their successes, failures, and the methods by which they overcame failure. Any science, math,
engineering, or technology content that is connected to their work or that they used to meet the challenge should also be included in the journal. The journal should be used as a formative and summative assessment tool.

ENRICHMENT
Have students use various other NASA simulators to experience flight and space-based operations Wright Brothers simulations in flight http://wright.nasa.gov/
The Mars Airplane simulator http://marsairplane.larc.nasa.gov/multimedia.html