



LESSON: Spinoffs

Title: NASA Spinoffs
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Lesson Overview:

To further expand the concept of how cool it would be to work as a NASA scientist, this lesson allows students to explore hundreds of products that resulted from NASA initiatives and how the inventors expanded new discoveries and technologies that have had a positive impact on our world. There are many cross-discipline connections so this particular topic could work well with integrated curricula programs.

For this lesson, it is important to have students learn about Internet research as there are many great articles and websites available. However, if student computers are not available, then there are hundreds of PDF articles from the *Spinoff* magazine website that could be downloaded, printed, and shared so the students could do research in a more traditional manner. Check with your library to see if it receives the annual publication.

Suggested Classroom Time: 60-180 minutes

Grade Levels: 6-10

KLASS Module: 3-Career Exploration

Topic/Console: NASA Spinoffs

Materials Needed:

Activity	Documents	Other Materials
1	Visit, choose, and discuss as many of these sites as relevant to the grade level and subject you are teaching: http://www.nasa.gov/audience/forstudents/postsecondary/features/F_NASA_Spinoff.html http://www.spacetechnology.org/ http://www.sti.nasa.gov/spinoff/database http://www.nasa.gov/topics/nasalife/index.html http://science.howstuffworks.com/ten-nasa-inventions.htm http://dsc.discovery.com/tv/nasa/home-and-city/home-and-city.html http://www.nasa.gov/externalflash/nasacity/	Demonstration computer with Internet connection
2	ACT_Spinoffs.doc	Student computers with Internet connection, Microsoft Excel, and writing tools
3	PRES_Spinoffs.ppt PRES_Spinoffs.doc (Optional, text only)	Student computers with Internet connection, Microsoft Excel and PowerPoint, and writing tools

National Standards/Objectives:

Discipline	Standard	Objective
Science	G. History and Nature of Science	Students explore science as a human endeavor.
Science	E. Science and Technology	Students develop their abilities in technological design.
Technology	Technology productivity tools	Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
Technology	Technology research tools	Students use technology tools to process data and report results.
Math	Representation	Students create and use representations to organize, record, and communicate mathematical ideas.
Math	Data Analysis & Probability	Students formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Desired Results:

Students will be able to answer these essential questions

- How are the inventions and technologies engineered by NASA used in our everyday lives?
- How can we use technology to organize data?

Students will know

- How to discover information about many NASA Spinoffs.
- How to perform general research using the Internet and how to design a system to collect and organize the data.
- How to discuss the way in which technologies can be adapted from scientific endeavors for our daily lives.

Students will be able to

- Gather and organize information from Websites and databases via a logical collection process.

Learning Plan/Activities:**1. Introducing the Lesson.**

Prior to introducing the lesson, update the *NASA Spinoffs* presentation (PRES_Spinoffs.ppt) and activity for your class experience.

Script: "Our exciting topic for today is NASA Spinoffs. Would anyone like to guess what a spinoff is?"

Open the *NASA Spinoffs* presentation (PRES_Spinoffs.ppt) and go through the 10 slides. There are scripted notes in the presentation, so you may want to File > Print > Notes and reference them during your lecture if this is new material to you.

2. Exploring, Researching, and Gathering Data.

Students will need time on computers with Internet connectivity, so be prepared by reserving a computer lab, issuing library passes, or breaking students into small groups for the research. Some of the research may be assigned as homework if students have access to computers at home.

3. Designing.

Depending on the technology skills of your class, you may need to demonstrate Excel and the proper sequence for setting up a spreadsheet. If you have a database software program for students such as MS Access, this may be a great time to introduce it to them.

4. Evaluating the Lesson.

Students should complete the *Spinoffs* activity (ACT_Spinoffs.doc) before attempting the electronic database/spreadsheet activity. Give feedback on their ideas for how the fields will be set up. Help them with the interface, and assign students to help one another if appropriate.

Assessment Evidence:

Performance Tasks

1. Collect and evaluate the written summaries on the activity sheet using the assigned strategy.
2. Assign credit and provide feedback on the spreadsheet/database activity.
3. If appropriate, have students share their database set ups and mention 1 or 2 of their favorite spinoffs to their peers.

Other Evidence

1. Perform daily classroom observation and assessment of progress and participation.
2. Compare the abilities of the individuals to use the technology required to previously submitted samples.
3. Make notes to self on improving the process for the next design project.

Extensions and Going Further Resources:

- This lesson can be easily expanded to advanced grades by increasing the requirements of the student mission.
- Plan an awards ceremony by using the nomination forms and other tools at <http://www.spacetechhalloffame.org/>
- Be sure to check for student opportunities, additional educational resources and more at: <http://www.nasa.gov/education>