Instructional Recipe

What do NASA and a Cell Phone have in Common?

4th Grade, Social Studies

Online research and information resources available through a partnership between the Texas State Library and Archives Commission, the Texas Education Agency and Education Service Center, Region 20
http://web.esc20.net/k12databases

Step 1 – Ask

Objectives:
Students will describe the impact of the growth of aerospace and other technology industries on life in Texas in the 1900s.

Introduction: Play the audio of the conversation between Apollo 13 astronauts and mission control in Houston at http://www.maniacworld.com/Apollo_13.htm

"24th April 1970…Apollo 13 lunar landing" Online Photograph. EBSCO Image Collection. 30 June 2009 http://search.ebscohost.com/login.aspx?direct=true&db=imh&AN=imh211889&site=srck5-live

Ask:

- What kind of technology do you use every day?
- Where do you think the center of the aerospace industry lives? Why?
- How do you think NASA and your cell phone are connected?

Vocabulary:

- **aerospace industry –** businesses that deal with the science of space
- **high technology (high tech) -** scientific technology involving the production or use of advanced devices especially in the fields of electronics and computers

TEKS:
(4.5) History. (a) identify the impact of various issues and events on life in Texas such as urbanization, increased use of oil and gas, and the growth of aerospace and other technology industries.
(4.21) Science, technology, and society. (b) describe how scientific discoveries and technological innovations have benefitted individuals, businesses, and society in Texas.

Technology Application TEKS:
4A Apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies.
6A Apply critical analysis to resolve information conflicts and validate information
6B Determine the success of strategies used to acquire electronic information
6C Determine usefulness and appropriateness of digital information
7A Use software programs with audio, video, and graphics to enhance learning experiences
7B Use appropriate software to express ideas and solve problems including the use of word processing, graphics, databases, spreadsheets, simulations, and multimedia
7C Use a variety of data types including text, graphics, digital audio, and video
10A Use font attributes, color, white space, and graphics to ensure that products are appropriate for the defined audience
10B Use font attributes, color, white space, and graphics to ensure that products are appropriate for the communication media including multimedia screen displays, Internet documents, and printed material

Created by Ravae Villafranca Shaeffer, Education Service Center, Region 20

Step 2 – Investigate

Search the K-12 databases and the Texas Heritage Online databases for more information about technology and industry in Texas.

Texas Heritage Online Resources:

- ★ "Demonstration of the First Working Integrated Circuit" historical marker. Dallas TX http://atlas.thc.state.tx.us/common/viewform.asp?atlas_num=5113006709
- ★ *Texas Instruments Semiconductor Product Plant, Dallas, Texas*. The Portal to Texas History. http://texashistory.unt.edu/ark:/67531/metapth3120/. Accessed June 30, 2009.

K-12 Databases Resources:

- ★ Lyndon B. Johnson Space Center. Monkeyshines on America, Oct 2003 Texas Issue, p25-26, 2p; Reading Level (Lexile): 1390; **(AN12723800)** <http://search.ebscohost.com/login.aspx?direct=true&db=prh&AN=12723800&site=srck5-live>
- ★ "**Houston**." Britannica Elementary Encyclopedia. 2009. Encyclopædia Britannica Online School Edition. 29 June 2009 <http://school.eb.com/elementary/article?articleId=353267>.
- ★ "**computer**." Britannica Elementary Encyclopedia. 2009. Encyclopædia Britannica Online School Edition. 29 June 2009 <http://school.eb.com/elementary/article?articleId=352990>.
- ★ Appreciation. Time, 7/4/2005, Vol. 166 Issue 1, p21-21, 1/3p; Reading Level (Lexile): 1170; **(AN 17449090)**
- ★ "**aerospace industry**." Compton's by Britannica. 2009. Encyclopædia Britannica Online School Edition. 30 June 2009 <http://school.eb.com/all/comptons/article-9272739>.
- ★ Science, Technology & Medicine Timeline.. Monkeyshines on America, Mar 2002 Events 1960-1980, p28, 1p; **(AN6456969)** <http://search.ebscohost.com/login.aspx?direct=true&db=prh&AN=6456969&site=srck5-live>

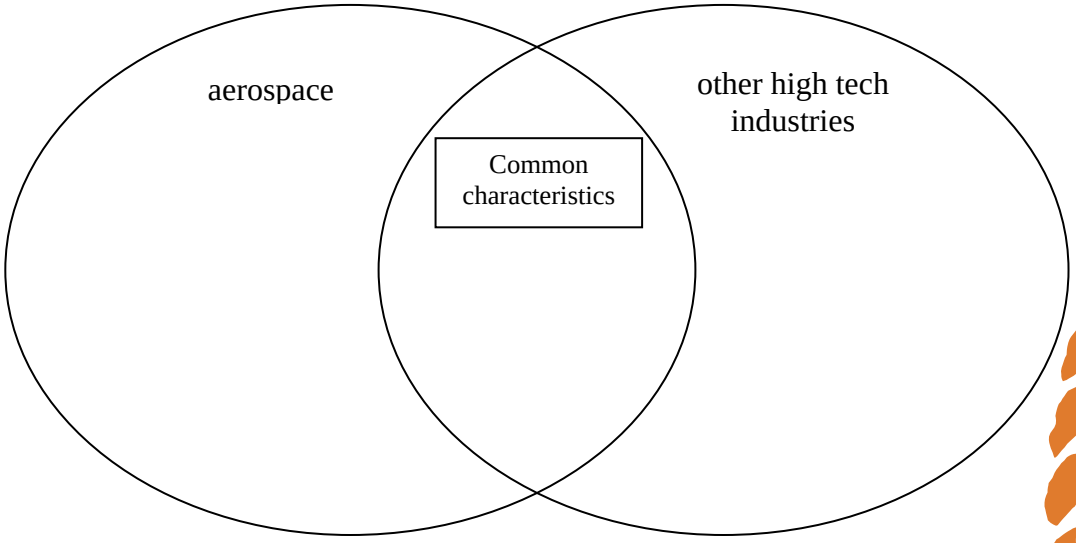
Websites:

- ★ Microelectronics and Computer Technology Corporation (MCC). http://www.tshaonline.org/handbook/online/articles/MM/dnm1.html
- ★ Texas Instruments - http://www.ti.com/corp/docs/kilbyctr/hightech.shtml

Step 3 – Create

Students can work individually or with partners to create a graphic organizer (Venn diagram) that organizes the information they learned about technology in Texas. Here are some suggestions for organizing the Venn diagram:

Venn Diagram: High Tech Industries



Allow students to share and discuss their Venn diagrams as an entire class.

Technology Link – Use a graphic organizer software program, such as Inspiration or ReadWriteThink (http://www.readwritethink.org, click Student Materials and select Venn Diagram) to create the graphic organizer.

Step 4 – Discuss

Students may choose to complete one of the following projects:

- ★ **Create a collage and skit** by collecting images that represent high tech companies (such as NASA or Texas Instruments) or products in Texas. Then create a skit to demonstrate how that company or product affects your everyday life.
- ★ **Create an illustrated timeline** by choosing a high tech company or industry such as aerospace. Collect images to help explain the development of the industry in Texas – how the industry began and grew or failed in Texas.
- ★ **Historical Role Play: Perform a skit.** Pretend that you are mission control in Houston and you need to communicate about a change or improvement in technology on a mission. In your skit, be sure to include the name of high tech products or companies that are helping you to sort out the problem.

Technology Link – Use a word processing or desktop publishing program, such as Microsoft Publisher, to produce the collage, timeline, or script for the skit. Use the Texas Heritage Online search or EBSCO image collection to locate graphics about high tech industries in Texas.

Step 5 – Reflect

Allow students to present their projects to the rest of the class. Use the following suggested rubric to assess the students' work. Make sure that the students are familiar with the rubric *before* they begin creating their project. They should refer to the rubric repeatedly to monitor their progress in creating their project.

Technology Link: You can also create your own rubric with your students at http://rubistar.4teachers.org/index.php.

Collage & Skit: High Technology Industries in Texas

Teacher Name: _____

Student Name: _____

CATEGORY	4	3	2	1
Knowledge Gained	Student can accurately answer all questions related to facts in the collage and processes used to create the poster.	Student can accurately answer most questions related to facts in the collage and processes used to create the poster.	Student can accurately answer about 75% of questions related to facts in the collage and processes used to create the collage.	Student appears to have insufficient knowledge about the facts or processes used in the collage.
Content - Accuracy	At least 7 accurate facts are displayed on the collage.	5-6 accurate facts are displayed on the collage.	3-4 accurate facts are displayed on the collage.	Less than 3 accurate facts are displayed on the collage.
Graphics - Relevance	All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation.	All graphics are related to the topic and most make it easier to understand. All borrowed graphics have a source citation.	All graphics relate to the topic. Most borrowed graphics have a source citation.	Graphics do not relate to the topic OR several borrowed graphics do not have a source citation.
Required Elements	The collage includes all required elements as well as additional information.	All required elements are included on the collage.	All but 1 of the required elements is included on the collage.	Several required elements were missing.
Skit Requirements	The skit relates more than one high technology industry to everyday uses.	The skit relates one high tech industry to everyday uses.	The skit inaccurately relates the industry to everyday uses.	The skit does not relate high tech industry to everyday uses.

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Timeline : High Technology Industries in Texas

Teacher Name: _____

Student Name: _____

CATEGORY	4	3	2	1
Content/Facts	Facts were accurate for all events reported on the timeline.	Facts were accurate for almost all events reported on the timeline.	Facts were accurate for most (~75%) of the events reported on the timeline.	Facts were often inaccurate for events reported on the timeline.
Graphics	All graphics are effective and balanced with text use.	All graphics are effective, but there appear to be too few or too many.	Some graphics are effective and their use is balanced with text use.	Several graphics are not effective.
Learning of Content	The student can accurately describe 75% (or more) of the events on the timeline without referring to it and can quickly determine which of two events occurred first.	The student can accurately describe 50% of the events on the timeline without referring to it and can quickly determine which of two events occurred first.	The student can describe any event on the timeline if allowed to refer to it and can determine which of two events occurred first.	The student cannot use the timeline effectively to describe events or to compare events.
Resources	The timeline contained at least 8-10 events related to the topic being studied.	The timeline contained at least 6-7 events related to the topic being studied.	The timeline contained at least 5 events related to the topic being studied.	The timeline contained fewer than 5 events.

Historical Role Play : Mission Control

Teacher Name: _____

Student Name: _____

CATEGORY	4	3	2	1
Knowledge Gained	Can clearly explain several ways in which his character "saw" things differently than other characters and can clearly explain why.	Can clearly explain several ways in which his character "saw" things differently than other characters.	Can clearly explain one way in which his character "saw" things differently than other characters.	Cannot explain one way in which his character "saw" things differently than other characters.
Role	Point-of-view, arguments, and solutions proposed were consistently in character.	Point-of-view, arguments, and solutions proposed were often in character.	Point-of-view, arguments, and solutions proposed were sometimes in character.	Point-of-view, arguments, and solutions proposed were rarely in character.
Historical Accuracy	All historical information appeared to be accurate and in chronological order.	Almost all historical information appeared to be accurate and in chronological order.	Most of the historical information was accurate and in chronological order.	Very little of the historical information was accurate and/or in chronological order.
Required Elements	Student included more information than was required.	Student included all information that was required.	Student included most information that was required.	Student included less information than was required.
Props/Costume	Student uses several props (could include costume) that accurately fit the period, show considerable work/creativity and make the presentation better.	Student uses 1-2 props that accurately fit the period, and make the presentation better.	Student uses 1-2 props which make the presentation better.	The student uses no props OR the props chosen detract from the presentation.