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-ist Science Career Research Project
"It's All in a Day's Work"

By: Marsha Hammack
5th Grade ELAR & Science Teacher

Length of Lesson: Nine, one-hour class periods (two class periods for instruction, five class periods for research and project creation, and two class periods for presentations)

Audience: 3rd-5th Grade Science and ELAR

TEKS:

Science

3.3 (C) Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.

4.4 (C) Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.

5.3 (C) Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.

ELAR

3.13 Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes.

4.13 Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes.

5.13 Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes.

National Agricultural Literacy Outcome:

Theme 5: Culture, Society, Economy & Geography
(Upper Elementary Grades 3-5)
T5.3-5.b. Discover that there are many jobs in agriculture

5-E Model

Engage: Read the book *Ada Twist, Scientist* by Andrea Beaty.

- Teacher will read the book aloud.
- Students will then be placed into small discussion groups.
- Focus Discussion Questions:
  - What is a scientist?
  - How do scientists learn about the natural world?
  - What tools do scientists use?
  - How can scientists learn from observations?
- Students will record their answers on a large piece of butcher paper that will act as a "graffiti wall" to display student thoughts and responses. In the middle of the large piece of butcher paper, the teacher has written in large letters, "A scientist is…."

Explore: Video: Agri Beef Co. Ranch to Table (students should watch the entire video)

- Students will independently watch and respond to questions embedded in a teacher created EdPuzzle video over the process of beef from the ranch to table. If using EdPuzzle for the first time, it is a free, online resource. While watching, students will respond to questions embedded within the video as well as think about the questions presented above in the **Engage** section of the lesson plan.
  - Question to ask before the movie:
    - What does "From Ranch to Table" mean?
  - Questions to ask throughout the movie for discussion purposes:
    - How does where these ranchers live compare to where you live? Likes and Differences. (Ask at 4:25 mark in video)
    - What is the primary purpose of the veterinarian's visit to the farm? (Ask at 6:00 mark in video)
    - What job does the cattle nutritionist (-ist word) do? (Ask at 6:35 mark in video)
    - What is done with the waste cattle produce? What do you think sustainable cycle means? (Ask at 7:20 mark in video)
    - What is the number one priority at the meat processing plant? (Ask at 9:30 mark in video)
    - Give at least one example of something mentioned in the movie that makes exceptional beef. (Ask at 10:20 mark in video)
    - What does "From the Ranch to Table" mean? (Ask at the 10:20 mark in the video)
- Once students have watched the video, they will come back to their discussion groups to discuss the following questions.

- Were there examples of scientists in the video?
- What tools did they use?
- How were they interacting and learning from their natural environment?
- How were they practicing observation skills?
- How is their job important to the community and us?

Explain: The Suffix -ist

- The teacher will explain that the suffix –ist is a common suffix added to a word that means "someone that is skilled in doing something." For example, pianist, soloist, and percussionist all are skilled in the music field. Ask students if they can think of examples of words ending in -ist. They might come up with florist, artist, and dentist (see list on page 8 of this document).
- Divide students into groups of two or three to read the Newsela article, *"Forest Ecologist Helps Refashion Barbie Dolls as Scientist."* While students read, they should think about how this article relates to the *Book Ada Twist, Scientist* and look for words ending in –ist.
  - In the book, Ada was a scient**ist**. What characteristics did Ada have that Nalini Nadkarni had? How were they the same and how were they different? What words did you find in the article that had the ending –ist?
- Explain that, in the field of agriculture (**a term that you might have to explain**), there are MANY –ists such as an agricultur**ist** or animal nutrition**ist**.
- Pass out USDA Living Science Resource Career Cards or have students go to the website.
  - Ask students to read their career card and provide answers to the following:
    1. Explain what your –ist does.
    2. Where does your –ist do their job?
    3. How does the career on your card connect to and affect your life or your community?
    4. What special clothing and tools does your -ist use? Does your -ist collaborate with others to perform their job?
    5. What education does your –ist need?
    6. How would your community be different without this job?
- Pair & Share: Have students turn and talk to a partner to share new information learned after reading the card.

Elaborate: Project-Based Learning

- Students will now explore the USDA Living Science career page. They will self-select an –ist on the webpage that they are interested in researching. They may also select an –ist on the list provided on page 8 of this document or come up with one of their own. However, it must relate to the agriculture field.
  - Students must use at least three primary sources for research information and prepare a bibliography page listing those resources.
- While taking notes, think about how you would go about answering the following questions?
  - How would you describe what your person does for a living and how they incorporate **science, technology, and math** into their job?
  - Describe **the education needed** for this job **and how it relates to the agriculture.**
  - Describe **where** your person might do their job and **special clothing** they might need. Tell why the place or location is important and why the clothing is necessary.
  - Describe **who might work alongside** your person and what **special tools** they might need to perform their job.
  - How does the –ist you selected connect to your life or your community?
  - Why were you interested in researching this career? Why did it catch your attention?

Project:

- The teacher will give each student a pattern of a person much like a paper doll (see page 12 of this document).
  1. The student will cut out and decorate the "person" to reflect the job he or she is skilled at doing (much like the Barbie Doll dressed up in the Newslea article).
  2. The student will place their person in a small, decorated box, such as a shoe box, to reflect **where** their person performs this job (similar to a diorama).
  3. The student will write a paragraph, (min of 8 sentences) that meets the requirements listed below. Students need to be prepared to present this paragraph and the decorated box/person to classmates through an oral presentation.
     - An introduction describing what the person does for a living and how they **incorporate science, technology, and math** into their job
     - Describe **the education needed** for this job**, and**

how the job relates to agriculture.

- Describe **where** the person might do their job and **special clothing** they might need. Tell why the place or location is important and why the clothing is necessary
- Describe **who might work alongside** the person and what **special tools** they might need to perform their job
- Conclusion: Why is this job important to the student and their community?

4. The timeline to research, decorate the "paper doll", decorate the box, and write the required paragraph will be two weeks. Students should be prepared to present their project to classmates at the end of the two weeks. Remind students to have fun and be creative! Below is a sample of the rubric that could be used to grade this project. *(Note: We recommend the teacher share the rubric with students, so they are aware of the grading components.)*

Evaluate: Rubric

Rubric	
Category	Score
Student cut out "person" and decorated it to reflect the job that he or she is skilled to do.	Yes=15 pts. Somewhat=10 pts. No=5 pts. Score_____
Student placed "person" in the decorated setting of where the person performs the job.	Yes=15 pts. Somewhat=10 pts. No=5 pts. Score_____
Student's paragraph meets all **5** requirements explained in the directions. • Intro incorporates math and science (10 pts.) • Education/salary/famous people with this job (10 pts.) • Where they perform the job and special clothing used (10 pts.) • Who they might perform the job with and special tools needed (10 pts.) • Conclusion (10 pts.)	 _____ _____ _____ _____ _____
Student's work is creative and completed on time.	Yes=10 pts. Somewhat=5 pts. No=0 pts. Score_____
Student correctly cited sources in bibliography page.	Yes=10 pts. No 0 pts. Score_____
	Grade_____

Student Reflection:

1. What is one general statement you think best summarizes agriculture?

2. What ideas remain unclear or incomplete after completing this project?

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Extension: You may choose to complete one or more than one extension task to present to your peers. *Teacher Note: These extension tasks and corresponding presentations can be given at the same time as the project presentation. This portion is meant for differentiation for students, such as GT, that might finish the research portion of the project early and need/want something else to do.

NAME: _____

Created a **PowerPoint or Google Slide Show** on biotechnology. What is it? How can it help us grow more food? How does it help the environment? Click here to view a great resource from Kiddle or search on the web for "Kids Bio Tech Basics Activity Book" put out by the Kansas Farm Bureau.	Create a **3D prototype/model** of an invention that would help your –ist in their particular job. Prepare a 2-3 min speech explaining your invention.	Click here to watch a Ted Talk by Stuart Oda on indoor vertical farming. Use **Google Drawings** or map pencils & paper to design your own indoor garden.
Prepare and present a script for a 2-3-minute **public service announcement** related to the job your –ist performs. Use an iPad or ask you teacher to record your announcement to play for your classmates.	**Extension Projects** **-ist Projects** **(You May Choose More Than One)**	Create a **newspaper article using Google Docs** with breaking news about an invention or current event related to your -ist. Include the 5 w's and how as well as a picture with a caption.
Create a **piece of art** that relates to the job your –ist performs. Prepare a 2-3-minute speech explaining what inspired you to create this particular piece of art.	Choose a partner or two to read over **the "Point of View" cards.** (See p. 6 of this document) Identify the issue and discuss the pros and cons of each person. Create and perform a short skit that debates both sides of the issue.	**Interview** someone that has a job in the agriculture field. Create a list of 8 questions you want to ask them. Record their answers in detail and present your findings in class.

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Common Words With –ist Ending
(-ist= someone that is skilled in doing something)

*Note: The below words are just suggestions. Students may come up with an -ist on their own to research; however, it must relate to agriculture and be approved by the teacher.

Flavorist	Biochemist	Speleologist
Agriculturalist	Anthropologist	Agronomist
Nutritionist	Chemist	Geneticist
Entomologist	Gemologist	Geologist
Herpetologist	Horticulturist	Food Scientist
Meteorologist	Zoologist	Biologist
Botanist	Molecular Biologist	Climatologist
Fisheries Scientist	Ornithologist	Ichthyologist
Nematologist	Seismologist	Hydrologist
Wildlife Conservationist	Lobbyist	Dendrologist

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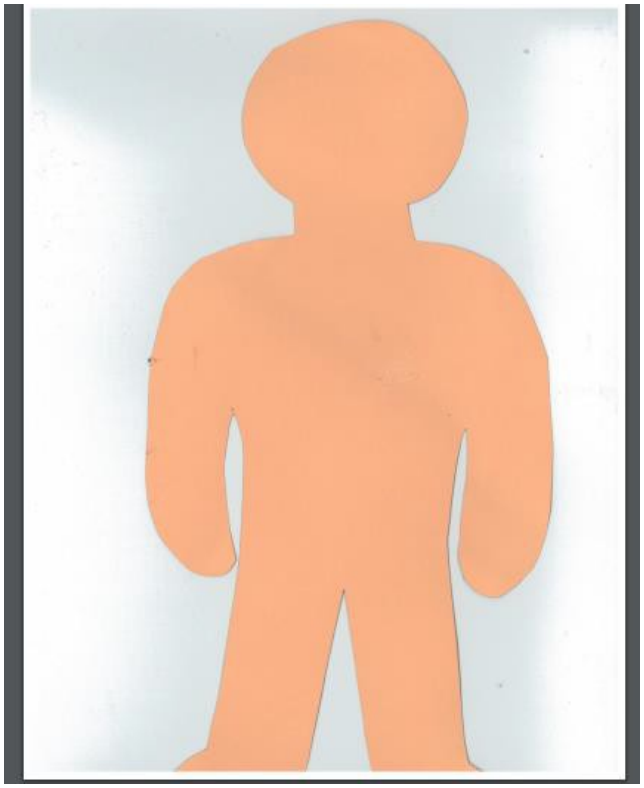
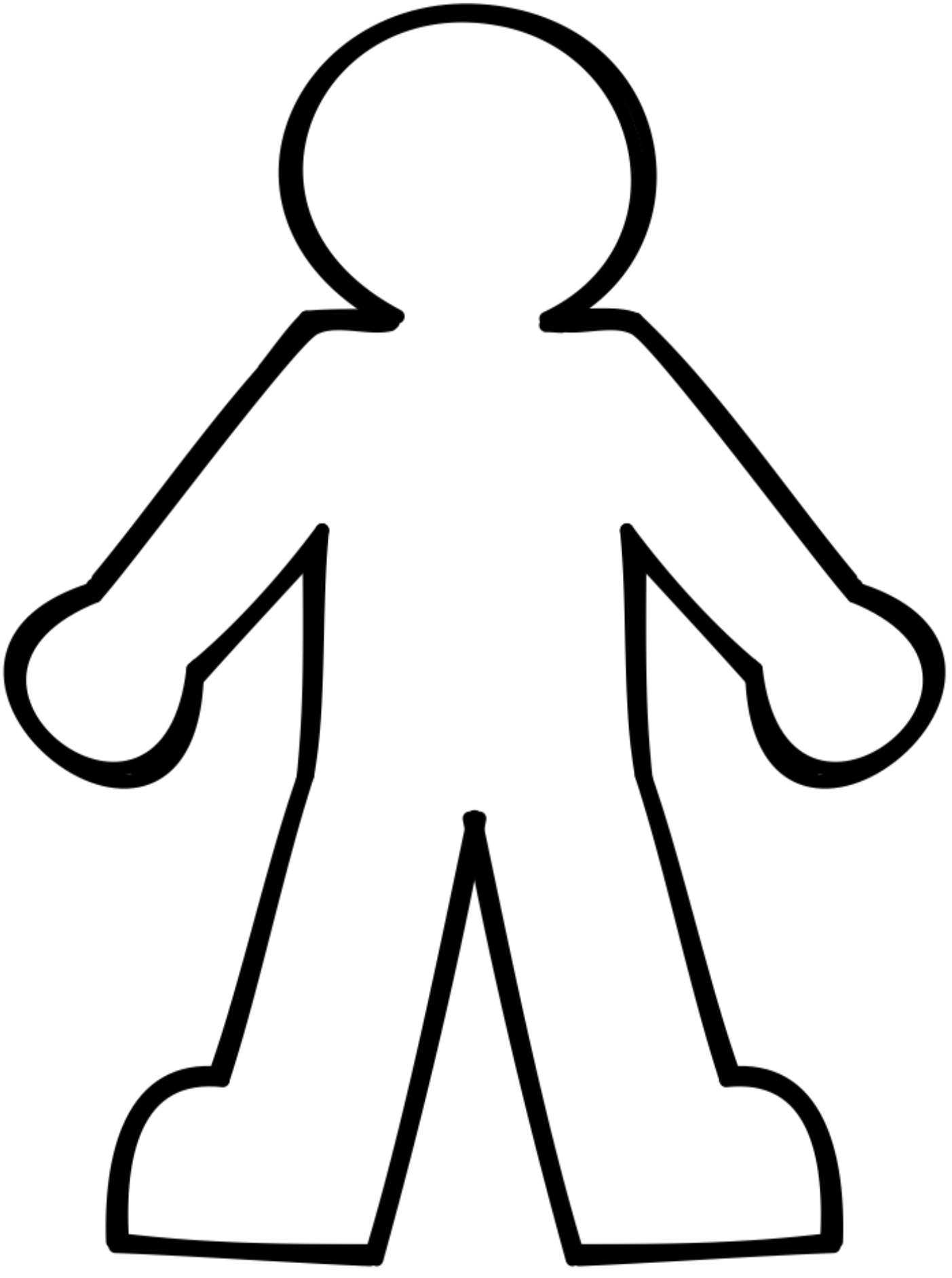
Point of View Cards

Farmer/Rancher You are concerned that area landowners are selling out to solar and wind farm companies, reducing the amount of food produced in your region and decreasing the value of your own land. You have been approached to sell as well; however, your farm/ranch has been in your family for over 100 years.	**Solar/Wind Farm Engineer** You know that there are endangered species of birds and aquatic life in the area where you plan to locate your next solar or wind farm, but this is how you make a living to support your family. Besides, alternative energy is the better energy.
Local Farm to Table Restaurant Owner Rumor has it that another solar or wind farm is being built in the very region you purchase your local produce from for the restaurant. You understand the importance of alternative energy but having to purchase produce out of the immediate area will force you to raise prices at your restaurant.	**Bird Watcher or Fisherman** You enjoy spending your free time outdoors fishing or bird watching. Lately, it seems that the local fishing spots are drying up and most of the trees have been cut down to make way for the new solar or wind farms.

Students take this pattern (see larger pattern below) and trace it out on 8x11 cardstock, then cut it out. They will decorate it to reflect the job of the person they are researching.



Students will then place the decorated paper doll into a diorama that reflects where this person works.



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Resources

1. Book: Ida Twist, Scientist by Andrea Beaty
2. Book: Kids Bio Tech Basics Activity Book" Kansas Farm Bureau
3. Article: Newsela article, "Forest Ecologist Helps Refashion Barbie Dolls as Scientist."
4. Video: Agri Beef Co. Ranch to Table
5. Video: TedTalk- Indoor Vertical Farming by Stuart Oda
6. Website: Edpuzzle
7. Website: USDA Living Science Resource Career Cards
8. Website: Kiddle
9. Website: GT Performance Standards