



Revolutionary New Farm

Grades 9-12: Pre-trip Activity II

PERFORMANCE GOALS:

In preparing for their visit to the farm, students review what they've previously learned about the technological changes in agriculture since the early 20th century and then offer their own predictions of advancements to come over the next 50 to 100 years.

OBJECTIVES:

- Students will discuss how new technologies and scientific innovations are bringing changes to agriculture. They will then speculate how future technologies and innovations will change agricultural practices over the next 50-100 years.
- Students will articulate their speculative ideas in writing, communicating them in a clear and persuasive manner.

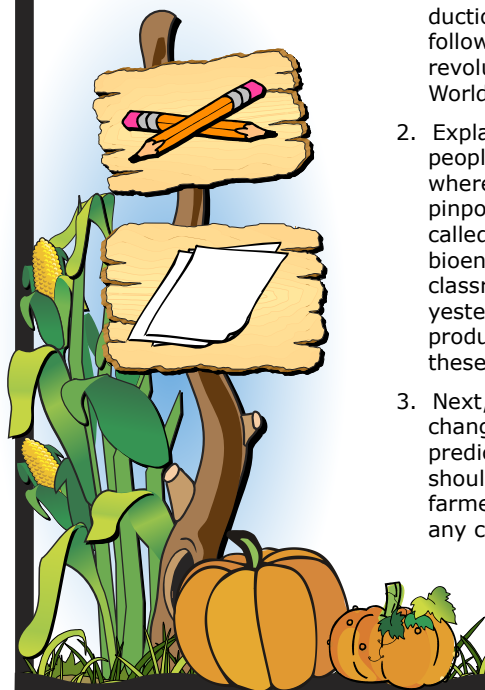
NATIONAL STANDARD:

- Technology
NT.K-12.2 Social, Ethical, and Human Issues
Students understand the ethical, cultural, and societal issues related to technology.
- NL-ENG.K-12.5 Communication Strategies
Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

PREPARATION:

1. Review classroom materials and other resources you may have previously covered in your class dealing with farming history and the agricultural revolutions of the 20th century.
2. Obtain and distribute the materials required in sufficient quantities for your students.

MATERIALS REQUIRED



ACTIVITY:

1. Briefly review with your class what they have previously learned about the development of agricultural technologies over the last century or so, beginning with the first mechanical revolution and the shift from manual and horse-powered machinery to tractors and other combustion-powered machinery. Remind them also of the introduction of hybrid corn in the 1930s, which significantly increased crop yields and was followed by scientifically bred forms of wheat, rice, and soybeans. Also mention the revolutionary impact of fertilizers, herbicides, and pesticides on agriculture following World War II, and the introduction of bioengineered crops in the 1990s.
2. Explain that today, new technologies and scientific innovations are changing the way people everywhere live and work. This is especially true in the world of agriculture, where computers and the Global Positioning Satellite system now make it possible to pinpoint exactly where extra irrigation and/or pest control are needed (a technology called "Precision Agriculture"—"PA" for short), while the crops themselves can be bioengineered to be more pest- and disease-resistant. Engage your students in a classroom discussion of how modern farming practices are different from those of yesteryear. Discuss how these developments have affected the types of food that are produced by farmers, the yields (amounts of food produced), and the availability of these foods to consumers.
3. Next, ask your students to imagine what sorts of new technological advances might change farming over the next 50 to 100 years and instruct them to write down their predictions in the form of an essay. The assumption should be that the advances should either increase yield, improve the quality of the food produced, make the farmer's job easier, add variety/novelty to the food supply, make farming safer..or any combination of the above.

4. Encourage your students to consider several different areas in which technological developments may affect farming such as robotics, telepresence and remote control, computing, satellite technology, wireless telecommunications, bioengineering, transportation, irrigation, climate control, organic farming, and so on. If you want, you can toss out a few imaginative “starter predictions” to “prime the pump”—ideas such as robot cultivators...genetically engineered self-shucking corn...cows bioengineered to produce chocolate milk...laser harvesters...etc.
5. The length of the essay is at the teacher’s discretion, but it should be at least one page. You should instruct your students to not merely list their predictions but also offer the reasoning behind their predictions, explaining why they think their ideas will present an improvement over current farming methods and technologies.
6. This activity can be assigned as either an in-class project or as homework. At teacher’s discretion, this activity can also be assigned as a group project, with several teams “brainstorming” ideas to present in front of the class.
7. A grading rubric is included for your use.

MATERIALS:

- Writing paper
- Pencils

Grading Rubric

	Analysis	Language/Grammar	Creativity
A 21-25 pts	Shows an excellent understanding of the issues confronted by farmers. Addresses 4 out of 5 of the assumptions mentioned in activity step #3.	Excellent essay. It includes a clearly developed introduction, supporting paragraphs, and conclusion. Words are consistently spelled correctly. Consistently uses correct punctuation and sentence structure.	Exceedingly creative prediction which consistently takes into consideration current and future technology. It is a lot of fun but still takes into account what the student has learned about agriculture
B 20-16 pts	Shows a good understanding of the issues confronted by farmers. Addresses 3 out of 5 of the assumptions mentioned in activity step #3.	Good essay. It includes an introduction, supporting paragraphs, and conclusion, 2 out of 3 of which are clearly developed. Words are usually spelled correctly. Usually uses correct punctuation and sentence structure.	Very creative prediction which usually takes into consideration current and future technology. It is fun but still takes into account what the student has learned about agriculture.
C 15-11 pts	Shows an understanding of the issues confronted by farmers. Addresses 2 out of the 5 assumptions mentioned in activity step #3.	Adequate essay. It includes an introduction, supporting paragraphs, and conclusion, 1 of which is clearly developed. Words are sometimes misspelled. Sometimes uses correct punctuation and sentence structure.	Adequate prediction which regularly takes into consideration current or future technology. It is fun but doesn’t take into account what the student has learned about agriculture.
D 10-6pts	Shows an inadequate understanding of the issues confronted by farmers. Addresses 1 out of the 5 assumptions mentioned in activity step #3.	Inadequate essay. It includes an introduction, supporting paragraphs, and conclusion. Many words are misspelled. Incorrect punctuation and sentence structure throughout the essay.	Inadequate prediction which only sometimes takes into consideration current or future technology. It is dull and doesn’t take into account what the student has learned about agriculture.
F 5-1 pts	Student has not understood the issues confronted by farmers. None of the 5 assumptions mentioned in activity step #3 are addressed.	Poor essay. It is missing an introduction, supporting paragraphs, and/or conclusion. Misspells all words. Poor punctuation and sentence structure.	Poor prediction which doesn’t take into consideration current or future technology. It doesn’t take into account what the student has been taught about agriculture.