

Exotic Plant Fair *Teacher's Guide*

Students research exotic plants and create displays to persuade others their plant is the worst of all.

GRADE LEVEL: Intermediate Grades

SUBJECT AREA/COURSE: Language Arts and Science

SUNSHINE STATE STANDARDS:

LANGUAGE ARTS:

GRADES 3-5

- The student will identify the authors purpose (e.g., to inform, entertain, or explain) in text and how an author's perspective influences text. (LA.3.1.7.2)
- The student will identify the authors purpose (e.g., to inform, entertain, or explain) in text and how an author's perspective influences text. (LA.4.1.7.2)
- The student will identify the authors purpose (e.g., to inform, entertain, or explain) in text and how an author's perspective influences text. (LA.5.1.7.2)
- The student will use digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) to present and publish in a variety of media formats. (LA.3.6.4.2)
- The student will determine and use appropriate digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publishing and presenting a topic. (LA.4.6.4.2)
- The student will determine and use appropriate digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publishing and presenting a topic. (LA.5.6.4.2)
- The student will examine how ideas are presented in a variety of print and nonprint media and recognize differences between logical reasoning and propaganda. (LA.4.6.3.1)
- The student will examine how ideas are presented in a variety of print and nonprint media and recognize differences between logical reasoning and propaganda. (LA.5.6.3.1)
- The student will use a variety of reliable media sources to gather information effectively and to transmit information to specific audiences. (LA.5.6.3.2)

GRADES 6-8

- The student will identify the authors purpose (e.g., to inform, entertain, or explain) in text and how an author's perspective influences text. (LA.6.1.7.2)
- The student will identify the authors purpose (e.g., to inform, entertain, or explain) in text and how an author's perspective influences text. (LA.7.1.7.2)
- The student will identify the authors purpose (e.g., to inform, entertain, or explain) in text and how an author's perspective influences text. (LA.8.1.7.2)
- The student will determine and apply digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publications and presentations. (LA.6.6.4.2)
- The student will evaluate and apply digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publications and presentations. (LA.7.6.4.2)
- The student will determine and apply digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publications and presentations. (LA.8.6.4.2)
- The student will analyze ways that production elements (e.g., graphics, color, motion, sound, digital technology) affect communication across the media. (LA.6.6.3.1)
- The student will analyze ways that production elements (e.g., graphics, color, motion, sound, digital technology) affect communication across the media. (LA.7.6.3.1)
- The student will analyze ways that production elements (e.g., graphics, color, motion, sound, digital technology) affect communication across the media. (LA.8.6.3.1)
- The student will distinguish between propaganda and ethical reasoning strategies in print and nonprint media. (LA.7.6.3.3)
- The student will distinguish between propaganda and ethical reasoning strategies in print and nonprint media. (LA.8.6.3.3)

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SUNSHINE STATE STANDARDS continued:

SCIENCE:

GRADES 3-5:

SCIENCE BIG IDEAS:

- Big Idea 1-A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
- Big Idea 15-A: Earth is home to a great diversity of living things, but changes in the environment can affect their survival.
- Big Idea 16-A: Offspring of plants and animals are similar to, but not exactly like, their parents or each other.
- Big Idea 17-A: Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
- Big Idea 17-B: Both human activities and natural events can have major impacts on the environment.

GRADES 6-8:

- Big Idea 1-A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
- Big Idea 15-A: The scientific theory of evolution is the organizing principle of life science.
- Big Idea 15-C: Natural Selection is a primary mechanism leading to change over time in organisms.
- Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms. (SC.7.L.15.2)
- Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species. (SC.7.L.15.3)
- Big Idea 16-B: Genetic information is passed from generation to generation by DNA; DNA controls the traits of an organism.
- Big Idea 17-A: Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
- Big Idea 17-B: Both human activities and natural events can have major impacts on the environment.

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will investigate exotic plants in a science fair setting.
- Students will gain an understanding of the problems created by exotic plants.
- Students will be exposed to the effect that mass media messages can have on a large number of people.

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BACKGROUND INFORMATION: Exotic plants are plants that have been brought to Florida by people. Some may have arrived with the first European explorers (water lettuce) and more arrive yearly. Exotic plants become invasive when the insects and other animals that eat them are not here, and they flourish. The plant may have toxins or other factors that are tolerated by species that eat them and keep them in check back home, but no Florida species are adapted to eat them. Plants are always competing for space, minerals, water, and sun. The invasives have an unfair advantage!

Invasive plants may produce a toxin that keeps other plants from growing around them, creating monocultures, like the melaleuca in south Florida. The plants that should be there for a Florida habitat aren't there and the animals have no food. They die, move away, or don't raise any young.

There may be fungi or bacteria that keep the plant in check in its home range that are missing here.

Invasive aquatic species can cover the surface of the water and shade out the eelgrass that is food and shelter (substrate) for both fish and macroinvertebrates, or they can form dense growths that even fish can't get through. Fish can't find a place to lay eggs, and food supply is diminished. Waterways may become clogged so boats can't get through.

Many invasive plants were first introduced as landscape plants or grown for aquariums and released into streams and lakes. Invasive plants are often spread from place to place as hitchhikers on boat trailers.

In preparation for this activity, preview the exotic plants. Go to www.hillsborough.wateratlas.org > The Atlas > Lake Name > (Select a lake. Lake Thonotosassa is a good one to try.) > Ecology tab > List of Plant Species. At the top are the reports by date. Some lakes have only one report; some have none. Two sources of information are cited under "Links for More Information." Click on them to reach the home page of each website. At the University of Florida's IFAS Center for Aquatic and Invasive Plants home page, scroll down to the notice for four large murals. Send off for these large color murals of invasive species. (<http://aquat1.ifas.ufl.edu/mural2.html>)

MATERIALS NEEDED: Computer with Internet access and www.hillsborough.wateratlas.org bookmarked, printer, paper, display board, markers, a variety of plant guides, real specimens if possible, tables, exit survey document. See above for the large plant murals from UF.

SAFETY: Caution: students should wash hands after handling plants and not put plants in their mouths. Students should be cautioned not to release specimens of invasive or exotic species into waterways when finished.

VOCABULARY: aquatic, invasive, exotic, native, species, monoculture, mass media

KEY: Presentations will vary.

PROCEDURE:

1. Assign or have students choose collaborative groups of 2 or 3.
2. Discuss native and non-native plants and animals. Use as an example a plant that is invasive that students may have seen, such as the air potato.

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3. Direct students to choose a few lakes listed from the website. They will look for plant species that seem to be common in most of the lakes they are researching. Compile a list of many invasive plants and put this list on a large class chart.
4. Each group will choose one plant from the class list, with each having a different plant. The students will gather research on their plant using the Watershed Atlas, (Links from the Ecology Tab > Plant List), Google Web and Image features, and other research material gathered by the teacher or students. Students must give proper credit for information and/or photos used.
5. Students will create presentations that will appeal to a range of ages from first grade to adults designed to persuade the viewer that theirs is the very worst invasive plant. Student groups will prepare Science Display boards that should be visually attractive. Include pictures, live or pressed specimen if possible, clear and easy-to-read titles and captions, and some type of graphic information.
6. The students will prepare computer-generated brochures or handouts to have available at the fair. If practical, they may prepare Power Point presentations.
7. Students will present their plant in an Exotic Plant Fair and invite other classes throughout the school. Students will prepare visual media such as School TV announcements, posters placed around the school and handouts announcing the fair.
8. On the day of the fair, student pairs will set up their displays and be available to talk about the dangers of their plant as well as answer questions.
9. Upon exiting the fair, each visitor will vote for the three plants they feel create the most environmental problems. Since the majority of the participants will have little or no previous knowledge of exotic plants, their decisions will be based mainly on the student projects. This will help the students understand the importance of media appeal.
10. Students will poll the participants as they leave to see why they voted as they did. The students can place the results on a bar graph and analyze it. A sample poll is found on the next page; however, the class should write their own exit poll.
11. After the fair, the students will tally the votes and then discuss why they think the three winning plants were chosen. Did specific age groups or gender groups make similar decisions? They can analyze the data and see if the features they used in creating the board did make a difference.
12. Finally, the students will tabulate the number of people they educated over a short period of time. This will give them an idea of why mass appeal is important in getting a message across. They also need to discuss whether or not they feel the fair made a difference. Will just having a little more knowledge cause the participants to do anything about the problem?

ASSESSMENT OF STUDENTS: The presentations and discussions that follow can serve as an assessment. Teachers should use rubistar.4teachers.org/ to create a rubric for the project assessment.

AUTHOR: Mary Jane Meherg, Goldsboro Elementary – Modified from the original lesson plans created for the Seminole County Watershed Atlas.

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