

An online exploration
of the biotic
communities of
Arizona with an
emphasis on
Mathematics and
Technology

Exploring Biomes

Lesson 5: You Need a Vacation

LESSON OVERVIEW

In this lesson, students will be assigned to one of the biotic communities of Arizona, and they will use online resources to obtain information about this community. When their research is complete, they will produce a commercial to persuade tourists to visit this biotic community.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Because of its wide range of elevations, Arizona has numerous biotic communities and is represented by almost all biomes
- Each biotic community in Arizona has distinctive plants, animals, and climate

OBJECTIVES

Students will:

- Use online resources to research a biotic community
- Use PowerPoint to create an automated presentation
- Identify the unique characteristics of Arizona's biotic communities

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Science	Mathematics	Technology
6	S1-C4-03	None	1T-E2-02; 1T-E2-03; 2T-E2-01; 2T-E2-03; 3T-E3-01; 3T-E3-02;
7	S1-C4-03	None	4T-E2-01; 5T-E1-01; 5T-E1-02; 5T-E1-05; 5T-E2-01; 5T-E2-02
8	S1-C4-01; S4-C4-01	None	
High School	S1-C4-03; S4-C3-01; S4-C3-02	None	3T-P3-01; 4T-P2-01; 5T-P1-03; 5T-P2-01; 5T-P3-02

Note: The full text of these standards can be found in Appendix A.

TIME FRAME

- 5 – 7 days (45 minutes each day)



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MATERIALS

- Computers with Internet access
- “Exploring Arizona’s Natural Resources” access (Web site or CD available at azgfd.gov/focuswild)
- Multimedia projector
- Microsoft PowerPoint
- *Biotic Communities Commercial Requirements* (one per student)

TEACHER PREPARATION

- Make enough copies of the *Biotic Communities Commercial Requirements* sheet for each student.
- Schedule computer lab time, if necessary.
- Divide the class into teams of 3 – 4 students.
- Assign each team one of the biotic communities. You may choose to combine the various grassland or desert communities. Or, you could put all of the communities in a “hat” and allow each team to draw one.
- If it is not possible or preferred to use computers to make commercials, the students can make brochures or posters to advertise their biotic community instead.
- Students should have experience with PowerPoint (particularly animations and timings). If possible, you may wish to coordinate with the technology teacher on this project.

SUGGESTED PROCEDURES

1. Introduce the activity by briefly reviewing biotic communities. In which biotic community is our school found? How do you know? If you could visit any biotic community in Arizona, which one would it be? Why? Encourage students to mention a few different communities.
2. Inform the students that they have been “hired” by the Arizona Office of Tourism to produce a short commercial about one of the biotic communities.
3. Distribute the *Biotic Communities Commercial Requirements* sheet. Review the requirements with the class. Emphasize that they will be assigned to a production team and a biotic community. Each team will use PowerPoint to produce a fully automated commercial that lasts between 30 and 45 seconds. They should use the Internet to find information and pictures to include in their commercial. If possible, they should also try to add sound or music.
4. Divide the class into teams and assign (or draw) the biotic communities.
5. Give the teams three to five days to research and develop their commercials. Use your best judgment to determine the time needed.
6. When all teams have completed their commercials, they will share them with the class. Allow them to use the multimedia projector.

ASSESSMENT

- Biotic community commercial



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EXTENSIONS

- Allow the students to show their commercials to a wider audience. Consider open houses, school board meetings, or school announcements.
- Many plants and animals in Arizona are found in more than one biotic community. Students can use the Heritage Data Management System available at azgfd.gov or other online resources to find a species that crosses over into more than one community and identify the adaptations that allow it to survive in the various environments.



Appendix A: Arizona Department of Education Standards – Full Text

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Science Standards

Grade	Strand	Concept	Performance Objective
6	1	4 – Communication	3 – Communicate the results of an investigation with appropriate use of qualitative and quantitative information
7	1	4 – Communication	3 – Communicate the results of an investigation with appropriate use of qualitative and quantitative information
8	1	4 – Communication	3 – Communicate the results of an investigation
	4	4 – Diversity, Adaptation and Behavior	1 – Explain how an organism’s behavior allows it to survive in an environment
High School	1	4 – Communication	3 – Communicate results clearly and logically
	4	3 – Interdependence of Organisms	1 – Identify the relationships among organisms within populations, communities, ecosystems, and biomes 2 – Describe how organisms are influenced by a particular combination of biotic (living) and abiotic (nonliving) factors in an environment

Technology Standards

Grade	Strand	Concept	Performance Objective
6, 7, 8	1	2 – Demonstrate increasingly sophisticated operation of technology components	2 – Retrieve and save information remotely (e.g., network servers, Internet, Intranet, peripheral devices) 3 – Demonstrate functional operation of technology devices (e.g., presentation devices, digital cameras, scanners, document cameras, scientific probes)
	2	2 – Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse	1 – Follow the rules for deciding when permission is needed for using the work of others, (e.g., some sites specify whether permission is required or not, some work is in public domain) 3 – Provide complete citations from electronic media (e.g., use age-level appropriate, district developed standardized reference formats for citing source of information)



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Technology Standards

Grade	Strand	Concept	Performance Objective
6, 7, 8	3	3 – Publish and present information using technology tools	1 – Design and create a multimedia presentation or Web page using multiple digital sources (e.g., from camera, video, scanner, CD-ROM, Internet) 2 – Publish or present the above production
	4	2 – Use technology tools for individual and collaborative writing, communication and publishing activities to create curricular related products for audiences inside and outside the classroom	1 – Plan, design and present an academic product using technology tools (e.g., multimedia authoring, presentation software, digital cameras, scanners, projection devices)
	5	1 – Locate information from electronic resources	1 – Identify electronic research resources 2 – Define subject searching and devise a search strategy to locate information using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources, grade level appropriate Internet resources) 5 – Identify author, copyright date and publisher of information located in electronic resources, including Internet resources
		2 – Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources	1 – Create citations for electronic research sources following a prescribed format 2 – Gather research from a variety of electronic sources and identify the most appropriate information for answering the research question
High School	3	3 – Use technology tools to publish and present information with interactive features	1 – Design and create a multimedia presentation of Web site with interactive features (e.g., animation, sound, action buttons to play, video, control devices, open other applications, link to a Web site)



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Technology Standards Continued

Grade	Strand	Concept	Performance Objective
High School	4	2 – Manage and communicate personal and professional information utilizing technology tools and resources	1 – Plan and present a product appropriate to the task
	5	1 – Develop a research strategy to find accurate, relevant, appropriate electronic information sources	3 – Independently select appropriate electronic resources from school, community and the world (via online) to be used to locate information when presented with a problem to solve
		2 – Investigate and apply expert systems (e.g., search engines and intelligent agents)	1 – Given a concept, use online search engines as well as resource-specific search features (e.g., CD-ROMs) to find relevant information
		3 – Present research findings from electronic resources using academic models for citations and format	2 – Create citations for resources used following an academic model to present research findings



Appendix B: Worksheets and Overheads

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The pages that follow contain the worksheets listed below:

- A. *Biotic Communities Commercial Requirements* – A complete list of the requirements for the commercial including a rubric (2 pages)



Biotic Communities Commercial Requirements

The Arizona Office of Tourism is always looking for unique ways to increase the number of visitors to our state, and they need your help. They are extremely pleased with all of your work on biomes and biotic communities, and they believe that this angle is an untapped resource. Your production team has been asked to develop a short commercial advertising one of the biotic communities of Arizona, with the ultimate goal of motivating more people to visit that particular region. However, the Office of Tourism is very specific about what they are looking for. Be sure to follow the requirements listed below.



Your commercial must:

- Be developed using Microsoft PowerPoint
- Be fully automated (you should not have to advance the slides with the mouse, keyboard, or any other device)
- Last between 30 and 45 seconds
- Focus on your assigned biotic community
- Describe the climate and location of the biotic community
- Feature at least three animals and three plants that can be found in that community along with interesting facts and adaptations about each one
- Contain plenty of pictures, graphics, video, or sound relevant to the topic
- Give at least three reasons why someone should visit
- Include a catchy and memorable slogan to promote tourism to the community

In addition, you must submit a list of all the sources used to develop the commercial. These should be cited in proper format. There should be at least three references used.

Please refer to the rubric on the back to see how each of the commercials will be evaluated.



Commercial Rubric

Use the following rubric to assist as you create your commercial.

CATEGORY	4	3	2	1
Required Content	All required elements (climate, location, 3 animals, 3 plants, 3 reasons, and slogan) are present.	One of the required elements is missing.	Two to three of the required elements are missing.	More than three of the required elements are missing.
Accuracy of Content	All facts included in the commercial are accurate and can be verified with the sources provided.	All facts appear to be accurate but some cannot necessarily be verified with the sources provided.	Most of the facts can be verified but one or two may be incorrect.	More than two of the facts are incorrect.
Mechanics	There are no spelling or grammatical errors in the commercial.	There is only one spelling or grammar mistake.	There are a few (two to four) spelling or grammar mistakes.	There are more than four spelling or grammar mistakes.
Timing	Commercial falls within the required time frame of 30 to 45 seconds.	Commercial falls outside the required time frame by no more two seconds.	Commercial falls outside the required time frame by three to five seconds.	Commercial falls outside the required time frame by more than five seconds.
Audiovisual	All photos, video, and sound make a valuable contribution to the message of the commercial.	Most of the photos, video, and sound are relevant but there are a few that distract from the overall message.	Commercial is text-heavy because there are not enough photos, video, or sound.	There are no photos, video, or sound, or these elements are irrelevant and poorly chosen.
Attractiveness and	The commercial is unique, creative, visually appealing, and well organized.	The commercial is visually appealing and well organized.	The commercial is well organized but does not gain the interest of the audience.	The commercial is hard to follow and lacks organization.
Citations	There are at least three sources used and they are correctly cited.	There are at least three sources but they are not correctly cited.	There are only one or two sources cited.	There are no sources cited.

