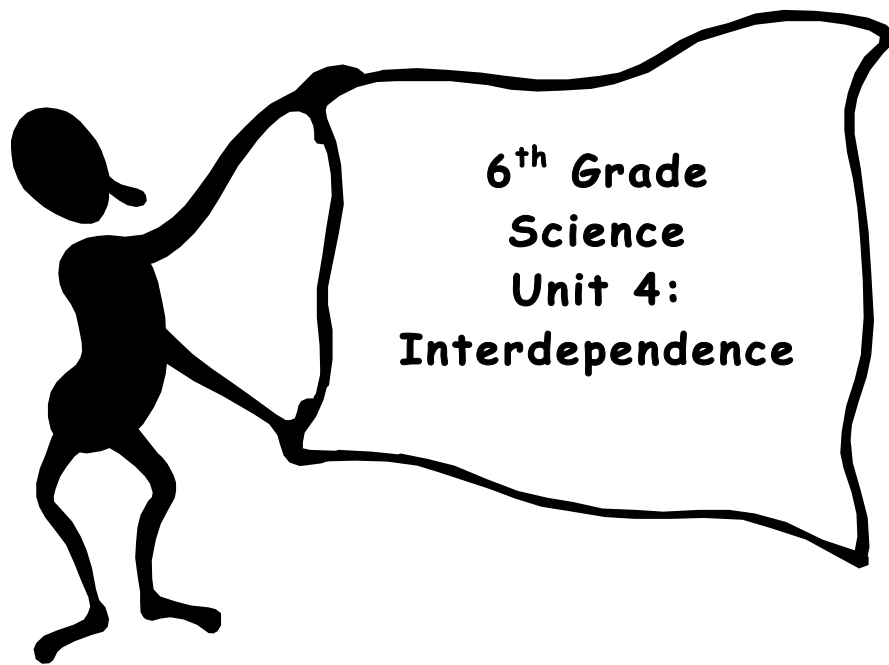


**New York City Department of Education
Magnet Program District 25 & 28**

Edward Bleeker Junior High School 185



Essential Question: How does climate influence architecture?

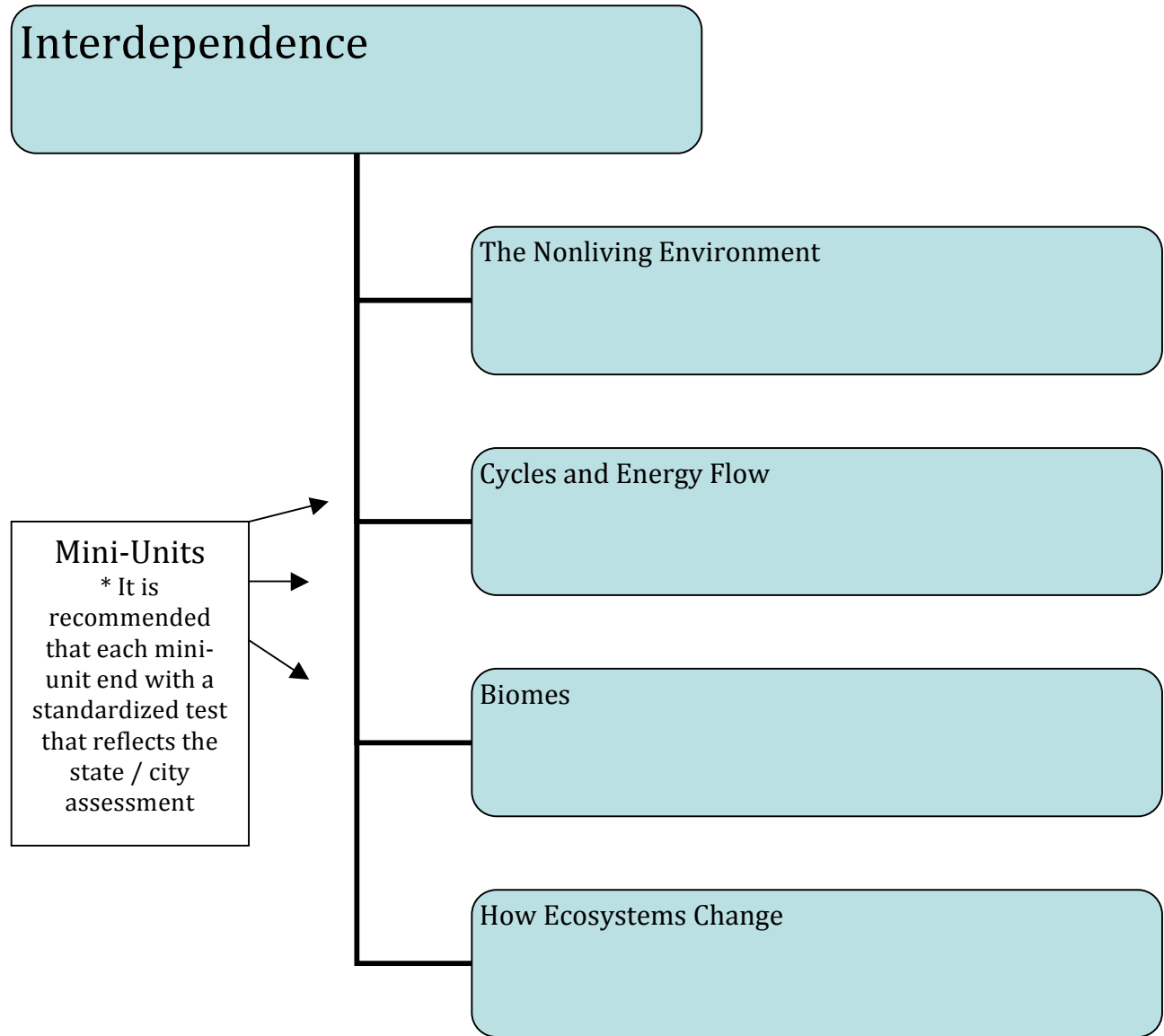
Suggested Time Frame: 5-6 weeks (4-5 for lessons and labs, 1 for project development)

Theme: Architecture

Graphic Overview of Unit

Suggested Time Frame:

Essential Question: How does architecture vary from biome to biome?



Unit's Culminating Project: (briefly explain in 2-3 sentences):

Working collaboratively, students will build a structure suited for an ecosystem that has been assigned to them. Using the concepts of scale model and architectural techniques, they will develop blueprints for their building plans and implement them. Groups can choose to construct functional buildings (homes, supermarkets, schools) or external structures (playgrounds, parks).

Stage 1- Desired Results

Standards-Based Learning Goals:

LE 7.1a: Create a chart to **compare** biotic and abiotic features of an environment. **List** examples of biotic and abiotic features.

LE 6.1c: Matter is transferred from one organism to another and between organisms and their physical environment. **Model** a cycle in nature to support this statement.

LE 6.1a: **Design** a model to show how energy flows through ecosystems. **Analyze** which model demonstrates the most complete feeding relationship in a community.

LE 7.2b: **Design** a flow chart to show the process of primary succession.

LE 7.1d, 7.2b: **Design** a flow chart to show the process of secondary succession that becomes a climax community

LE 7.2c, 7.2d: **Discuss** how human activities affect air, water and soil of the climate and ecosystems of the seven major biomes.

LE 7.2c, 7.2d: **Hypothesize** how the effects of human activities have resulted in pollution to aquatic ecosystems.

Concepts

<p>Big Ideas for this Unit</p> <ul style="list-style-type: none"> Abiotic Factors Cycles (water, nitrogen, carbon) Energy flow (food chains/webs) Ecosystems Biomes Aquatic Ecosystems 	<p>Magnet School Theme: Architecture</p> <p>How does the Big Idea in your unit connect to your theme?</p> <p style="text-align: center;">Students will observe how the human-built environment is engineered to suit the natural environment they inhabit.</p>
<p>Enduring Understandings</p> <p>The nonliving components of an ecosystem are essential to the plants and animals that inhabit it.</p> <p>Cycles and energy flow in an ecosystem help to maintain equilibrium.</p> <p>Ecosystems change over time.</p> <p>Organisms, including humans, and their man-made environment, must adapt with the ecosystems.</p> <p>Humans adapt their environment to suit their needs, and the structures and materials they use vary according to the biome they inhabit.</p>	<p>Overarching Essential Question: (this question should connect to your school theme)</p> <p>How does climate influence architecture?</p> <p>How does architecture vary from biome to biome?</p>

Content and Skills

Content Students will know...	Skills Students will be able to...
biotic abiotic soil	- Identify biotic (living) and abiotic (nonliving) factors in most ecosystems.
atmosphere	- List the components of air that are needed for life.
climate	- Explain how climate influences life in an ecosystem.
water cycle evaporation condensation	- Explain the importance of Earth's water cycle.
nitrogen cycle nitrogen fixation	- Recognize the role of nitrogen in life on Earth.
carbon cycle	- Diagram the carbon cycle.
chemosynthesis	- Explain how organisms produce energy-rich compounds.
food web energy pyramid	- Describe how energy flows through ecosystems. - Recognize how much energy is available at different levels in a food chain.
biome tundra taiga temperate deciduous forest temperate rain forest tropical rain forest desert grassland	- Explain how climate influences land environments. - Identify seven biomes of Earth, their defining characteristics, and compare them.
wetland coral reef intertidal zone estuary	- Compare flowing freshwater and standing freshwater ecosystems. - Identify and describe saltwater ecosystems. - Identify problems that affect aquatic

succession pioneer species climax community	ecosystems. - Explain how ecosystems change over time. - Describe how new communities begin in areas without life. - Compare pioneer communities and climax communities.
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Stage 2- Summative Assessment Evidence

If students understand, know and are able to do the items in Stage 1, they should be able to show their understanding by completing an authentic task found in the world beyond the classroom.

G- (goal) Your goal is to create a model home for the Community Design Symposium (CDS).

R- (role) You are an architect who has been invited to design a home for one of six biomes.

A- (audience) Your model will be presented along with competing architects for a contract to build your design in the community that hired you.

S- (situation) Your challenge is to think from the perspective of someone living in that region. You will also see how this relates to:

- How your home is built to suit your climate
- How energy is brought to your home
- Why homes in other parts of the country are built differently
- How climate affects architecture
- How waste management is essential to keep an environment as healthy as possible
- Where is your food coming from?
- Imagine you were living in the home; what would you expect to find there? How would it have to be suited for the environment in which you live?
- How can you incorporate what was learned earlier in the year (Unit 1) about renewable and nonrenewable resources to include an energy source in your model home?

P- (purpose and product) The purpose of this project is to teach others about how natural ecosystems influence the man-made environment that humans develop.

S- (standards for performance)

Standard 1 – Interactions of the community and the physical environment (LE 7.1a)

You will need to consider how the nonliving environment, including weather, soil type and sunlight, interact within your community and with humans in general.

Standard 2 – Interactions of humans within the natural community (LE 7.2c, d)

You must keep in mind how your home will interact within the community related to pollution and disruption of the local plant and animal life.

Standard 3 – Energy in the environment (LE 6.1c)

How can you take advantage of the natural resources in the area in terms of electricity, food and water without harming the local ecosystem?

Student Task

Dear Student:

Congratulations! Your class has been invited to attend the Community Design Symposium. It is a great honor to participate in the conference, and we hope to receive your R.S.V.P. soon!

The Community Design Symposium (CDS) is an event organized by the Homes for All Foundation, and focuses on building housing communities in neighborhoods in a variety of ecosystems. Homes for All is the group that built the first successful housing community *under water* back in 2003, and has been holding this symposium every year since then to further their cause.

As a participant in the CDS, you and your colleagues must design a home for one of the six biomes listed on your RSVP form.

Your challenge is to think from the perspective of someone living in that. What would you expect to find there? How would it have to be suited for the environment in which you live?

- How your home is built to suit your climate
- How energy is brought to your home
- Why homes in other parts of the country are built differently
- How climate affects architecture
- How waste management is essential to keep an environment as healthy as possible
- How can the design be made affordable?

You must submit **THREE** items for your presentation:

1. A fact sheet poster about your biome and home with the following information:
 - a. Average annual rainfall
 - b. Average temperature throughout the year
 - c. Plants and animals that inhabit the biome
 - d. A food web that shows how the organisms in the biome are related
 - e. A list of materials you used to make your model home
 - f. An explanation of the parts of your model home
 - g. A map showing the location and latitude of the neighborhood you are planning

- h. Pictures of the planned location for your neighborhood (photos or diagrams of your assigned biome)
- 2. A journal from EACH member of your group that maps the progress of your model-building (See below)
- 3. A model home created to scale

As you are developing the model of your home as a group, you will be maintaining your own journal to demonstrate your engagement with the project. The journal will be presented along with your model, so it should be well organized, neat and attractive.

The following information should be collected in a journal as you go along:

- Weekly journal entries that will be assigned to you throughout the unit.
- Dated, daily logs of the work your group has done when you are given time in class to work on your model
- Research that you found, written out as a paragraph explaining what information you have found
- A one-page POINT OF VIEW journal entry of what it might be like to live in the house you developed.

Your model will be presented along with competing architects for a contract to build your design in the community that hired you.

We look forward to your response!

Sincerely,
 Rayne Forrester
President and Chief Organizer of the CDS

Please RSVP within one week of the announcement to increase your chance of being assigned your top choice.

I would like to create a home for the following ecosystem, listed in order of preference from 1-4

- | | |
|--|---|
| <input type="checkbox"/> Tropical Rainforest | <input type="checkbox"/> Desert |
| <input type="checkbox"/> Tundra | <input type="checkbox"/> Grassland |
| <input type="checkbox"/> Wetlands | <input type="checkbox"/> Deciduous forest |

Name: _____ Class: _____

Rubric For Culminating Project

Project Component (Percent of total grade)	1	2	3	4
Model Home (50%)	The model meets the criteria of the project. Care was taken to ensure that the home meets the needs of the biome it inhabits. The model demonstrates real-world applicability.	The model meets the criteria of the project. The home is mostly suitable for the biome it inhabits. All components are present. With some work, the model could be real world applicable.	The model meets the criteria for the project. The home is somewhat suitable for the biome. Some components may be missing.	The model does not meet the criteria of the project. Components are missing. The model does not demonstrate real world applicability.
Construction of the Model: Care taken (10%)	Great care taken in construction process so that the structure is neat, attractive and follows plans accurately. Appropriate materials were selected and creatively modified in ways that made them even better.	Construction was careful and accurate for the most part, but 1-2 details could have been refined for a more attractive product. Appropriate materials were selected and there was an attempt at creative modification to make them even better.	Construction accurately followed the plans, but 3-4 details could have been refined for a more attractive product. Appropriate materials were selected.	Construction appears careless or haphazard. Many details need refinement for a strong or attractive product. Inappropriate materials were selected and contributed to a product that performed poorly.
Biome Factsheet (20%)	Food web contains accurate information for the biome. Map of the world is accurately labeled with the location of your biome. Climate information is correct and complete. Model home materials and parts of the model are listed and justified on the factsheet. The pictures are accurate representations of the biome. Overall the poster is	Food web contains accurate information for the biome. Map of the world is accurately labeled with the location of your biome. Climate information is correct and complete. Model home materials and parts of the model are listed and justified on the factsheet. The pictures are accurate	Food web contains accurate information for the biome. Map of the world is accurately labeled. Climate information is complete. Model home materials and parts of the model are listed and justified on the factsheet. The pictures are accurate	One or more components are missing, or the poster shows little preparation and care taken. There are multiple spelling errors.

	attractively displayed and neat. There are few, if any, spelling errors.	representations of the biome. Overall the poster is neat. There are few spelling errors.	representations of the biome. There are a few spelling errors.	
Journal (20% - Graded individually)	Journal provides a complete record of planning, construction, research, and some reflection about the strategies used and the results beyond the minimum requirements. Entries all have dates on them, and are in order. It is well organized and attractive. There are no spelling errors.	Journal provides a complete record of planning, construction, and research beyond the minimum requirements. Entries have dates and are organized chronologically. There are few spelling errors, if any, and they do not affect comprehension of the journal.	Journal provides the minimum requirements, including a decent record of planning, construction, and research. Entries mostly have dates. There are a few spelling errors that make comprehension difficult.	Journal provides very little detail on planning, construction, and research. Entries are disorganized, or journal appears to have been put together carelessly and haphazardly. There are many spelling errors.