

BOX-CITY

Urban Ecosystem/Community

Grade Level: 6 – 12th

Created by Phanat Xanamane
2020 Teaching Artist in Residence

Robert C. Tannen | BOX-CITY Exhibition
February 7th, 2020 – May 16th, 2020



BOX-CITY Urban Ecosystem/Community

Grade Level: 6–12th Grade

Lesson Description:

Students will learn urban design terms and practices through engaging with the *Robert C. Tannen | BOX-CITY* exhibition. The centerpiece of the exhibition is an interactive installation consisting of 48" x 40" x 48" triple wall cardboard boxes. Students will design a BOX-CITY that addresses community needs and wants: homes, green spaces, economic, and social-cultural spaces. After the students set up an initial layout for the boxes, they will have to adapt their design in response to an environmental challenge. This will involve collaborative learning, problem solving, and critical thinking as students consider a range of design choices. Afterwards, students will move to the museum's classroom to focus on planning and creating models for the growth of one city block in the West End District of New Iberia, Louisiana. Students will use tools from the study of ecosystems such as charting the flow of resources and patch dynamic analysis to inform their design decisions. They will view and comment on models of the West End District built by University of Louisiana at Lafayette architecture graduate students. Finally, students will reflect and provide feedback that will contribute to discussions of revitalization efforts in the West End District.

Overarching Theme/Universal Concept:

Urban Ecosystem, Adaptation and Resilience

Essential Questions:

- What is an ecosystem? How do urban ecosystems work?
- How can diagrams, drawings, models be used to convey information and solve problems?
- How can humans adapt to environmental challenges?
- What makes a community more resilient? How can we design and create resilient communities?

Objectives and Focus Questions:

- What is urban design?
- What models and diagrams can you make to analyze or study a community?
- What is scale?
- What information do different scale models convey? Which size scale model is better for solving a particular problem?
- What are examples of needs and wants that communities have? What are examples of resources and assets that a community needs and has?
- What makes a design good? What are some of the other design options or choices?

Key Terms:

Human Ecosystem

Urban Ecology

Urban Design

Patch Dynamics

Diagram

City Code

Commercial

Residential

Mixed-Use

Resilient

Green Space

Scale Model

Zoning



Standards:

Louisiana Science Standards

Science instruction will focus on communicating ideas and solving problems using different types of scale models

Science and Engineering Practices

8. Obtaining, Evaluating, and Communicating Information

Describe how specific images support a scientific or engineering idea. Communicate information or design ideas and/or solution ideas with others in oral and/or written forms using models, drawings, writing, or numbers that provide specific detail about scientific ideas, practices, and/ or design ideas. Communicate scientific and/or technical information orally and/or written formats, including various forms of media, as well as tables, diagrams, and charts.

Disciplinary Core Idea

Human Impact on Earth's Systems

Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS.ESS3C.b)

Natural Resources

Resource availability has guided the development of human society. (HS.ESS3A.a)

Louisiana Visual Arts Standards:

Art instruction will focus on recognizing and comparing design choices. Students will compare different urban design choices and use this knowledge when explaining judgments about the built environment.

VA-AP-M4 and **VA-AP-H4** Demonstrate awareness of various new ideas, possibilities, options, and situations pertaining to the art world. Compare and contrast multiple possibilities and options available for artistic expression.

VA-CA-M3 and **VA-CA-H3** Express and explain and justify aesthetic judgments about the created built environment. Critique the design of structures or areas in the created (built) environment based on aesthetic criteria.

Pre-Visit Activity

The Human Ecosystem: Tools for Understanding Community Needs and Resources

Materials:

- Powerpoint Introductory Lesson with video
- Human Ecosystem Diagram
- BOX-CITY Urban Ecosystem/ Community Pre-visit Hand-out

View

After explaining to students that they will be taking a field trip to the museum, view the Power point slides introducing Phanat Xanamane, the Hilliard Art Museum's 2020 Teaching Artist in Residence, and the exhibition *Robert C. Tannen | BOX-CITY*.

Review the City Code for BOX-CITY.

In the exhibition students will work together to move cardboard boxes to design a BOX-CITY.

Human Ecosystem Framework

Urban designers have adopted many of the ideas and tools that scientists have created to study ecosystems. One tool is to create a diagram of resources and how they interact with different human systems in a community.

Examine:

the Human Ecosystem diagram with students and have them complete the accompanying handout.

Discuss:

How is a human ecosystem similar to other ecosystems? (Included on next page)

The Human Ecosystem

Critical Resources

Natural Resources

Energy
Air
Water
Land
Plants
Nutrients
Materials

Social/ Economic Resources

Information
Money/Capital
Labor
Technology

Cultural Resources

Art
Music
Religion
Tradition

Social Systems

Family
Health/Medicine
Education/Schools
Government
Business/Industry

Things that Flow through the Human Ecosystem

Individuals
Energy
Nutrients
Materials
Information
Money/Capital

Case Study: West End District, New Iberia, LA

As part of their visit to the museum, students will study one block along Hopkins Street in the West End District of New Iberia. They will design and create scale models of structures and green spaces to enhance the quality of life in the neighborhood.

Watch the video

After watching the video interviews with residents of Hopkins Street, have students list the assets and needs of residents on the pre-visit handout.

Discuss

The strengths and challenges of the neighborhood.

Classroom Extension:

Use Google maps to locate New Iberia and Hopkins Street. Use Google Maps street view feature to see how the neighborhood currently looks.

At the Museum

BOX-CITY Construction: Designing Adaptable and Resilient Communities

Activity 1: Models and Scale

Students will look at models of the same living unit at three different scales and discuss how having different scale models can be useful for problem solving.

Discussion Questions:

- What is a model? What is scale?
- Which scale model will be best to use for planning a city? A community? A house?
- What different information can you learn from each type of model?
- How many people do you think can live in the 8'x 8'x 8' living unit?



Full Scale 1 ft = 1 ft



Half Scale 6 in = 1 ft



1/2 in = 1 ft

Building Challenge: Box City 1.0

Create an urban design model that meets community needs.

Students will list needs and wants that they think a community might have. Needs will be categorized by type, including *green spaces*, *social or cultural needs*, *housing needs*, or *economic needs*.

Please Touch the Art

The central artwork of the exhibition is *Robert C Tannen | BOX-CITY* is a large conceptual and interactive artwork consisting of movable cardboard boxes that represent modular living units.

Students will be assigned building zones and will work in teams to build a BOX-CITY that includes design elements that address a community need appropriate for their assigned zone. The building zones are a green zone, an economic zone, and a social/cultural zone. Each zone will receive seven boxes and seven 4'x4' sheets of paper representing green space. Depending on their assigned zone, students will receive additional boxes or green space to include in their design. **Each BOX-CITY zone must include living space for all the students assigned to that zone.**

Sample Team

10 students are assigned to the green zone. They are given seven boxes and seven sheets of paper representing 4'x4' green spaces and are challenged to create a city with additional green spaces. They are given three additional sheets of paper to create more green space.

Flows and Patches in an Urban Ecosystem:

Small Group Work

After building their cities each group will:

- Explain how their design choices fit the needs of their community
- Explore other design options for improving or adapting their city
- Draw a map and label the parts of their BOX-CITY

Large Group

- Students will listen to other groups explain their design choices
- Students and the Teaching Artist will consider how their three zones together create a human ecosystem. What will the flow of resources and human activity be like in the ecosystem?

- Using colored sticky notes, the teaching artist and students will mark boxes according to the need category each box serves.

Yellow: Shelter or Living Space

Blue: Economic Space

Pink: Social/Cultural

Green: Green Space

- Students and the Teaching Artist will use the colored sticky notes to discuss and track how goods, resources, and people might travel across the different zones of the city.
- The Teaching Artist will introduce the idea of patch dynamics and differentiate between zones and patches. Why do communities create building zones?

Individual Work:

- In their gallery guide, students will complete a flow diagram showing how people and items flow through the different zones and patches in their community.

Key Terms:

Flow: movement of people or items through a community

Zone: a section of a town or city that is created for a particular use. Ex. business zone or residential zone

Patch: a spatial area that is different from its neighboring areas

Patch Dynamics: an approach ecologists use to study and map patterns in the landscape of an ecosystem. For example, an ecologist might create a map showing how patches of higher elevation relate to patches containing a particular type of plant. Ecologists use patch maps to study how different types of patches interact and change over time. Patch Dynamics has been adopted by urban designers to map land use and flow of people or materials through a community.



Building Challenge: BOX-CITY 2.0

Create a BOX-CITY that can adapt to change.

Change

Due to rising sea levels there is less livable land in BOX-CITY.

Challenge

Build a BOX-CITY for the same number of people, but now everyone must live in one zone instead of three. Your adapted BOX-CITY must include housing for everyone and meet the same economic, social/cultural, and green space needs.

Students will work together to design and build a new BOX-CITY that contains the same number of living units and green space in one zone instead of three.

Discussion Questions:

- How does your new design meet all the community's needs?
- How did you adapt your design?
- How have the patches and flows changed in the BOX-CITY?
- How resilient is your BOX-CITY?

Key Terms

Mixed-Use Planning: a type of urban development in which different functions or uses can happen in the same space. For example allowing residential or living space to be in the same building as a business.

Resilient: able to withstand or recover from difficult conditions

Adaptable: able to adjust to changes or new conditions

Classroom Extension

Create a smaller-scale city in your classroom using file boxes or boxes that students collect. You can create zones and climate or population challenges for your students.

In the Museum's Classroom

Case Study

West End District, New Iberia, LA

Essential Questions

How do you design to meet the needs of a particular community?

How do you judge the quality and effectiveness of a design?

How can a scale model be used to plan or problem solve?

Activity 1

Learn about the neighborhood

Students will look at a model of one city block in the West End neighborhood. Using knowledge they gathered from the pre-visit activity video and handout, students will discuss the assets, needs, and challenges of the community.

Scale: Neighborhood Block 1/16 in = 1ft



Building Challenge

Design a 1/16" scale model for one lot on Hopkins St. in the West End neighborhood.

Students will receive a plastic base and building blocks for constructing their model. The student will be assigned a particular lot that is zoned for certain uses. The zones will correspond to the colors used during the exhibition building challenges. Most lots will be mixed use and assigned more than one color.

Building zones and building block colors

Yellow: Shelter or Living Space

Blue: Economic Space

Pink: Social/Cultural

Green: Green Space

Activity 2

Patches and Flows

Students will lay their models on the larger site model of Hopkins Street. Since colors on the building blocks correspond to the different zones, students will be able to see what types of needs are being addressed on each lot and examine how the patches and flows in the neighborhood have changed.

Discussion Questions

How does the flow of items and people in the neighborhood change with the addition of the new designs? What people and items now flow in the community?

How is the redesigned community more resilient?

How does your design help meet the community's needs? Are there additional changes that could be made to improve the community and better serve the residents?



Activity 3

Evaluate Other Models and Contribute to Community Feedback

Students will view and comment on models created by University of Louisiana at Lafayette graduate architecture students for the West End Districts. Students comments and ideas will be collected and added to feedback gathered from the West End community. This combined feedback will contribute to revitalization efforts in the West End District.

Post-visit Activity

Designing Solutions for your Community

Essential Questions

What are actions you could do at school that would improve your community life? Draw a design or write one change that you could implement. (Think of your school as a human ecosystem, how do people and things flow through the school, what systems operate in the school - could you draw an ecosystem flow chart or use patch dynamics to map out different areas in the school?)



Resources:

Envision da Berry - Community Organization in New Iberia

<https://www.facebook.com/EnvisiondaBerry/>
www.daberry.org

Lesson Plan on a Mapping Biodiversity

<https://www.nationalgeographic.org/activity/mapping-biodiversity/>

Patch Dynamics

<https://www.smartcitiesdive.com/ex/sustainablecitiescollective/patch-reflection/142261/>

Designing Patch Dynamics

https://www.academia.edu/12056129/Designing_Patch_Dynamics

Mcgrath, Brian & Pickett, S.T.A.. (2011). The Metacity: A Conceptual Framework for Integrating Ecology and Urban Design. *Challenges*. 2011. 10.3390/challe2040055.

Ecological resilience and Resilient cities.

https://www.academia.edu/20304099/Ecological_resilience_and_resilient_cities

Machlis, Gary & Ludwig, Kristin. (2014). Science During Crisis: The Application of Interdisciplinary and Strategic Science During Major Environmental Crises. *Understanding Society and Natural Resources: Forging New Strands of Integration Across the Social Sciences*. 47-65. 10.1007/978-94-017-8959-2_3.