Twinmotion

SUSTAINABLE NEIGHBORHOOD PARK

Architecture, Design, Social Studies, Science and Engineering, CTE

Grades 9–11, one to two weeks (6–8 hours)

TwinMotion is an amazingly easy-to-use, real-time visualization tool built on Unreal Engine. The documents and resources attached provide educators with a toolbox for creating engaging, meaningful lessons that allow you and your students to demonstrate knowledge and meet learning objectives within Twinmotion.

TwinMotion has built-in tools and assets, and is very intuitive for students who want to begin to explore interactive 3D. Students can import files from other 3D applications or build assets in the program using the existing libraries, and then showcase their work using images, panoramas, or animations.

Educators can use Twinmotion in any content areas, such as architecture, design arts, math, science, language arts, and history. The template provided with the Teacher Guide will assist you in planning lessons that use Twinmotion as you would for any lesson you might create. The goal is to create a community repository of lessons that educators can share and remix to meet their teaching and learning goals.

Description of class / learning environment

The classroom should have space for work groups to share ideas about sustainability, possibly with white boards, and areas to brainstorm best solutions.

Classroom should have computers available for all students, with flexible seating.

Lesson Overview

We all visit parks! Some are small urban neighborhood retreats, others are large city oases amid bustling traffic and dense development. Parks serve as meeting places for friends and communities, a place to exercise or walk your dog, or a spot for relaxing under a tree to read a book.

In this lesson, students will design a sustainable neighborhood park for their own community. Students will learn about sustainability and how it affects their community, and how it can enhance a community's quality of life and promote responsible management of resources.

By the end of this lesson, students should also know how to use the built-in tools and assets, andhow to import objects into Twinmotion.

Essential Questions/Big Ideas

- Why is sustainability important?
- How can you use a visualization tool such as Twinmotion to teach others about sustainability?
- How can a sustainable park impact a community?

Learning Outcomes/Objectives

The student will be able to:

- Understand what sustainability means for a public space like a park
- Utilize Twinmotion to design and visualize a project
- Create presentation images and animations for their project

Learning Activities

Sustainable Neighborhood Park

The concept of sustainability involves a commitment to environmental, economic, and social practices that enhance a community's quality of life and promote responsible management of resources. Most importantly, a commitment to sustainability requires us to think about the impact of our actions on future generations.

Exploration

What is a park?

Show students examples of all the different types of parks, from parklets to big city parks. Talk about what parks exist in your city. Have students think about what they would like to see in a park that they could easily walk to and enjoy.

Research

What makes a park sustainable?

Sustainable parks are designed and constructed to address issues facing the community, such as stormwater management or improving air quality by promoting alternative transportation.

Sustainable parks should include native plants, recycling, and solar energy, and the design should take into consideration the protection of natural habitats.

Have students pick a block in their city that they can walk to. Using grid paper, have them sketch out the key features they would like to see in their park, keeping sustainability as the key theme. This can be any block—even if there is already a building there.

Students will choose three sustainable themes to incorporate into their park, and research how they will be able to implement them.

Twin motion is required to complete this project, but students will only need to learn the basics of Twinmotion to design and tell the story of their sustainable neighborhood park.

Twinmotion has real-world location maps, so students will be able to locate their neighborhoods to build and visualize their parks in a geographically-correct setting.

Sustainable Neighborhood Park

Project Requirements:

Size—One city/neighborhood block in your city

Minimum Requirements:

- Native vegetation
- Water feature
- Solar lighting
- Sitting area with benches and/or tables
- Walking path
- Restrooms (import from SketchUp Warehouse)
- Small structure imported from SketchUp Warehouse (this can become a coffee stand, recycling station, information kiosk, food truck or anything you would like it to be!)

Your park also must include two features from the list below:

- Playground
- Place for a farmers market
- Community-run garden spaces
- Small area for performances
- Dog park
- Sports area
- Bike path/bike racks
- Mural

Technology

(2–3 hours to learn and explore the software)

Note: Teachers and students are advised to watch the Twinmotion - Getting started video and check out the Twinmotion support site.

Key technical skills necessary to complete the assignment.

- Navigating the Twinmotion User Interface
- How to pan and rotate in 3D Space
- How to move, rotate, scale and duplicate Objects
- How to select Objects and apply Materials
- How to manipulate primitive objects
- How to change the color of a Material
- How to apply textures to Objects
- How to import Objects from SketchUp Warehouse
- How to name and hide Objects within a scene
- How to create images from your scene
- How to render and export an animation

(2–4 hours) Students work in Twinmotion to complete their parks.

Project Deliverables:

Deliverables:

1. Completed Sustainable Neighborhood Park Twinmotion file
2. A short animated walkthrough showing the key features of their park
3. Three images rendered to show the key features of the park
4. An original 2D sketch showing the original layout
5. A one-page document listing the sustainable features with explanations for each

Note: Students may combine these items in a slide presentation.

Resources

www.pps.org/article/futureparks
www.nps.gov/articles/quick-nps-history.htm
www.gardenvisit.com/history_theory/library_online_ebooks/architecture_city_as_landscape/history_public_parks
conservationtools.org/guides/93-creating-sustainable-community-parks
www.earthnetworks.com/blog/parks-and-recreation-sustainability-3-ways/

Assessments

Completed Project: Sustainable Neighborhood Park

Deliverables:

1. Completed Sustainable Neighborhood Park Twinmotion file
2. A short animated walkthrough that shows the key features of the park
3. Three images rendered to show the key features of the park
4. The original 2D sketch showing the layout
5. A one-page document listing sustainable features used, with explanations for each

Rubric

	Developing	**Competent**	**Proficient**	**Distinguished**
Sustainability Features	Project does not convey a clear understanding or application of sustainability.	Project shows a basic understanding of sustainability.	Demonstrates a proficiency in understanding sustainability.	Student demonstrates exemplary use of sustainability concepts.
2D Concept—Park Sketch	Project requires more attention to the look and feel of the experience, as well as the general design.	Project shows some attention to aesthetics and thoughtful design, but is incomplete or lacking in some aspects of layout and design.	Project is well organized and pleasing to the eye; easy to navigate and understand. Demonstrates thoughtful design.	Project is well organized and creatively designed. Great use of available and user-created assets; world is inviting and thoughtful. Intentional design is obvious.
3D Project—Technical	Student has difficulty describing the intent of the project.	Student can mostly describe/ reflect upon the basics of the project and intended learning objectives.	Students provides a thoughtful reflection/	Project is well organized, makes good use of space; great use of available and user-created assets; world is inviting and thoughtful, and intentional design is apparent.
Reflection—Final Presentation	Student has difficulty describing the intent of the project.	Student can mostly describe/ reflect upon the basics of the project and intended learning objectives.	Student provides a thoughtful reflection/ explanation of the project, and how the sustainable park was designed and developed.	Student can describe how the sustainable park benefits the community, and how it was designed and developed. Presentation is eloquent, and the final product is most impressive.

Standards Mapping

Technology

A. TECHNOLOGICAL DESIGN FUNDAMENTALS

A1. Describe the design process, and identify ways in which technological design can address an environmental need or challenge.
A1.3. Identify and describe the steps in the design process.
A1.4. Describe the relationship between various steps of the design process.

B. TECHNOLOGICAL DESIGN SKILLS

B1. Use appropriate tools and strategies to research, plan, and organize design projects that have environmentally sound designs and production processes.
B2. Apply appropriate methods for generating and graphically representing design ideas and solutions.
B3. Construct models and prototypes using a variety of techniques, tools, and materials, and assess these models and prototypes in terms of the design criteria.

SOURCE: The Ontario Curriculum, Grades 11 and 12: The Arts, 2010.

The Arts

A. CREATING AND PRESENTING

A1. The Creative Process: Apply the creative process to create media art works, individually and/or collaboratively.
A1.2. Develop plans, individually and/or collaboratively, that address a variety of creative challenges, and revise their plans on the basis of peer- and self-assessment.
A3. Using Technologies, Tools, and Techniques: Apply traditional and emerging technologies, tools, and techniques to produce and present media art works for a variety of audiences and purposes.
A3.1 Explore a variety of traditional and emerging technologies, tools, and techniques, and use them to produce effective media art works.

ISTE Standards

3—Knowledge Constructor

Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

3a Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
3c Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

4—Innovative Designer

4a Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
4b Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

6—Creative Communicator

6a Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
6b Students create original works or responsibly repurpose or remix digital resources into new creations.
6c Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects, such as visualizations, models or simulations.

Interdisciplinary and 21st Century Connections

This lesson covers areas related to engineering, science, and multimedia design. This lesson integrates all areas of STEM/STEAM.

21st Century Connections:

- Critical thinking
- Creativity
- Collaboration
- Communication
- Technology literacy
- Flexibility

Modifications and Accommodations

Modifications and accommodations will be made as required. Modifications could include reducing the project expectations, providing students with ready-to-use assets to assist with project creation in Twinmotion, or providing extra time based on a student's IEP.

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