

Lesson 3 3D Cities

Learning Objectives

Students will:

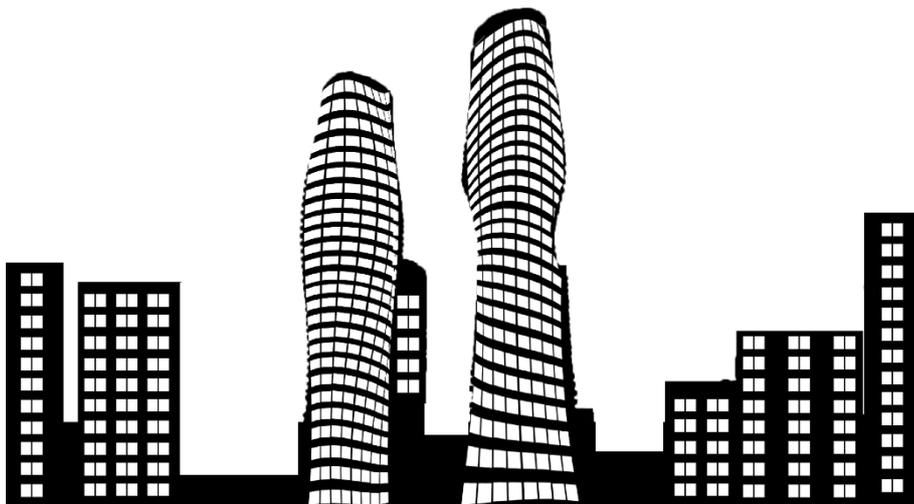
1. learn about the differences between wood boards and cardboard;
2. be able to apply the **Bring Sketch to Life** feature to their projects;
3. be able to use **LaserBox**.

Preparation

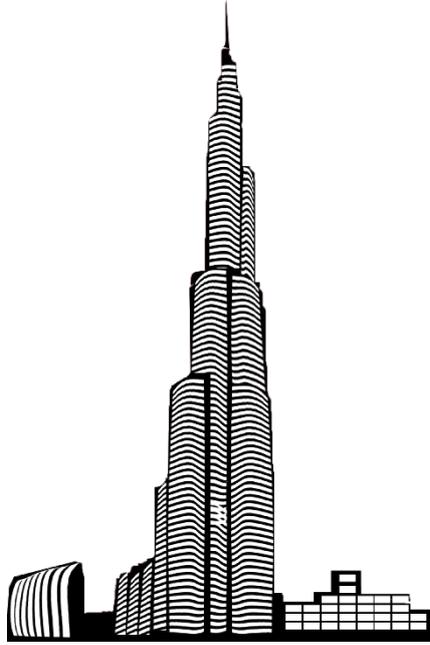
1. Engraving materials: 3.5mm cardboard sheets
2. Markers
3. **LaserBox**

Session 1 Lead-in

A challenge for students: Can you recognize the city by its picture? Look at the pictures below, identify as many cities as possible and tell others how you manage to identify them.



City: Mississauga (Canada)



City: Dubai (The United Arab Emirates)



City: New York City (United States of America)

Give students time to solve the challenge.

Give explanations: "Why can you recognize the city by a picture of it? Because given above are the pictures of the landmarks, the most widely-known and recognizable buildings of the cities. The impression of the landmarks helps you associate them with

the cities where they're located. So, the premise of solving the challenge is that you have some knowledge of these buildings."

"A cultural landmark usually comes along with the development of a city. It's like a city icon. A cultural landmark could be the tallest building in a city, for example, Ping An Finance Centre in Shenzhen. However, in many cases, it's a building or a place that possesses a special cultural significance for the city and the people living in it, such as the Acropolis of Athens, the Flavian Amphitheater in Rome, the Forbidden City in Beijing, the Statue of Liberty in New York City, etc. Architecture is a mirror of the development of society, and as the famous architect I.M. Pei reckons, architecture is a social art."



Session 2 Show Examples



Source: <http://www.artstthread.com/p/nadinespencer>

In 2011, Nadine Spencer from Nottingham Trent University exhibited her work, *A World of Yesterday's Tomorrows* in the London Design Festival. Her piece is a fruit of imagination, architecture design, laser-cutting techniques, and light. We can make our own paper-cutting artwork, too, with the help of **LaserBox**.

Session 3 In-class Task

In this session, students will design and create a city. They can add all kinds of elements they like to their projects, such as their favorite buildings, plants and transportation

elements. It doesn't matter what kind of the city it will be, a future city, a ghost town, a fun town, a floating city, etc. Encourage students to stretch their imagination. However, remind them that they need to carefully arrange all the elements. In the end, put students' artworks together to build a megapolis!

Bring Sketch to Life

We can use the **Bring Sketch to Life** feature to make a paper-cutting artwork. When we use this feature, the machine recognizes two colors, red and black. When the outline is closed and drawn in black, **LaserBox** cuts along the outline. As for the details, the ones in black will be engraved and the ones in red will be cut. Please remember that the patterns drawn in red will always be cut by **LaserBox**. So, choose the right color to draw your image when using the **Bring Sketch to Life** feature.

In the previous lessons, we used wood boards as engraving materials, but this time we're going to use cardboard.

Ask students: We're going to use a different material today. Can we set the same laser parameters for different materials?

Possible answer: No. Different materials could have different thickness and texture, which requires different laser parameters. For example, a wood board is harder than a cardboard sheet.

Give explanations: "Wood boards and cardboard have different material properties, so laser parameters like power and speed would be different. Compared with wood

boards, cardboard is more flammable, so you need to increase the speed but decrease the power value to avoid damage to your craft caused by high power. Possibilities brought by materials can vary. Cardboard is more flexible than wood boards, making it an ideal material for crafts where folds and bends are needed. However, wood boards could be your first choice when you're looking for materials of more strength. In short, when learning about laser cutting, pay close attention to the materials you use. A correct understanding of materials lays the basis for a beautifully cut or engraved craft."

Demonstrate

- Collect the architectural elements you want to use in the project;
- Draw the outlines of buildings on the cardboard, and arrange the buildings in a reasonable way;
- Put the cardboard sheet in the machine;
- Press the **Start** button;
- Decorate the project.

Independent Practice

- Have students work on their designs.
- Use **LaserBox** to cut and engrave students' drawings.

Session 4 Share

Have students share their beautiful artworks after the processing is complete. Ask them: What inspired you? What kind of buildings were used in your project? And what's the meaning behind your buildings?

Session 5 Wrap-up

"In this lesson, we created a 3D city using **LaserBox** and adjusted laser parameters based on the materials used in a project. Laser parameters, like power and speed,

could vary on the materials we use to make crafts."

Session 6 Extension

Chinese paper-cut is a visual art of traditional handicrafts. Here comes a home activity for students: learn more about the Chinese paper-cut art, design a pattern and accomplish the paper-cut piece.

