

Lesson 1: What is 3D Printing?

3D Printing Center - Elementary Curriculum

3D Printing Center

45 minutes

Welcome to 3D Printing!

Today's Big Question

What is 3D printing and how does it work?

Amazing 3D Printed Objects

Look at These!

- Toys and games
- Tools and gadgets
- Prosthetics helping people
- Food (yes, food!)
- Car parts
- Medical devices

Pass around demonstration objects

How Does 3D Printing Work?

Think of Building with Pancakes!

- 3D printing builds objects **layer by layer**
- Like stacking pancakes on top of each other
- Each layer sticks to the one below it

From Computer to Object

The 3 Steps

- ① **Design** - We create on computers
- ② **Slice** - Computer breaks design into layers
- ③ **Print** - Machine builds layer by layer

Show infographic: "From Computer to Object in 3 Steps"

The Magic Material

How Plastic Becomes Objects

- Plastic filament gets **heated up**
- Squeezed out like **frosting from a tube**
- **Cools down** and hardens
- Layers **stick together** as they cool

3D Printing Helps People

- **Custom phone cases** and game pieces
- **Replacement parts** for broken toys
- **Art projects** and sculptures
- **Helpful tools** for people with disabilities
- **Medical devices** like prosthetics
- **Aerospace** and car parts

Object Detective

Examine the printed objects on your table

- What do you think each object is used for?
- Can you see the layers?
- Which one is your favorite? Why?

3D Printer Safety Rules

- **Never touch** the hot parts
- **Don't reach** into the printer while it's working
- **Tell a teacher** if something looks wrong
- The printer gets **very hot** - like an oven!

Watch the Printer Work!

Show the actual 3D printer in action

- **Hot end** - where plastic comes out
- **Build plate** - where object grows
- **Filament** - the plastic “thread”

3D Printing is Amazing!

- Builds objects **layer by layer**
- Starts with **computer designs**
- Uses **heated plastic**
- Helps people in **many ways**
- Is used in **many industries**

Lesson 2 Preview

“Now that we know what 3D printing is, we’ll learn to design our own objects!”

- Learn to use Tinkercad
- Design your first keychain
- See your ideas come to life!

Reflection Time

What surprised you most about 3D printing?

Quick sharing - one word or phrase

Cleanup Time!

5 Minutes to Pack Up

- Help organize demonstration materials
- Put objects back carefully
- Clean up your workspace
- Get ready for next class

Great job learning about 3D printing today!