Lesson 3: How Printing Works + Design a Container

3D Printing Center - Village School

v1
2025

Welcome Back Designers!

Look What We Made!

Show printed keychains from Lesson 2

- **Your designs** came to life!
- **Real objects** from your ideas
- **Amazing work** everyone!

How Your 3D Printer Created Objects

The Complete Printing Process

Step 1: Slicing
- Computer cuts design into thin layers
- Each layer 0.2mm thick
- Hundreds of layers per object

Step 2: Layer by Layer
- Hot plastic draws each layer
- One layer at a time, bottom to top
- Each layer sticks to the one below

Step 3: Cooling & Bonding
- Hot plastic cools down quickly
- Layers bond together as they cool
- Final object becomes one solid piece

Safety Reminder:
- Never touch hot parts (200°C+!)
- Don't reach into printer while working
- Tell a teacher if something looks wrong

Today's Challenge: Design a Container

Your Mission: Create a small container for desk supplies

Container Requirements:

- Big enough for paperclips or erasers
- Has walls and a bottom
- Hollow inside (using "Hole" tool!)
- Printable size (fits on build plate)

Design Tips:

- Walls should be at least 2mm thick
- Bottom should be at least 1mm thick
- Opening big enough for your hand
- Test size by measuring real objects

Think Like a Designer:

- What problem does your container solve?
- Who would use this container?
- Where would they keep it?
- How can you make it better?

Today's Process:

1. Start with cube or cylinder
2. Add smaller shape inside
3. Make inner shape a "Hole"
4. Group them together

We'll learn the "Hole" tool that makes shapes subtract instead of add!

Tinkercad DEMO!

Lesson 4 Preview

"Problem-Solving Design Challenge"

- Design something to solve a real problem
- Use everything you've learned
- Be creative problem solvers!