Lesson 5: Improve Your Design + Print Prep

3D Printing Center - Village School

v1

2025

Welcome Back Designers!

Look What We've Created!

Show printed containers from Lesson 3

- **Your containers** are real objects!
- **Problem-solving designs** from last lesson
- **Amazing progress** in just 4 lessons!

What Worked Well?

Examining Our Prints

Let's analyze together:

- **What** printed successfully?
- **What** had challenges?
- **Why** did some work better than others?
- **How** can we improve?

The Power of Iteration

Making Things Better

Iteration means:

- **Looking** at what you made
- **Finding** ways to improve it
- **Making** changes
- **Testing** again

Real designers do this all the time!

Common Printing Issues

Learning from Problems

- **Walls too thin** - make them thicker (2mm+)
- **Overhangs failed** - add support or redesign
- **Parts don't fit** - check measurements
- **Rough surfaces** - simplify complex curves

Today's Mission

Improve and Perfect

You can:

- **Fix problems** with existing designs
- **Make** your problem-solver better
- **Start** a completely new project
- **Prepare** your best work for printing

Design Improvement Focus

Key Areas to Check

- **Wall thickness** - at least 2mm
- **Part connections** - do they fit together?
- **Size** - is it practical to use?
- **Details** - add personal touches
- **Functionality** - does it solve the problem?

Improvement Time (25 minutes)

Choose Your Path

Option 1: Fix your container design **Option 2:** Improve your problem-solver **Option 3:** Start something completely new **Option 4:** Combine ideas from multiple projects

Design Guidelines Reminder

Printability Checklist

- ☒ **Walls** at least 2mm thick
- ☒ **Size** fits on build plate (200mm x 200mm)
- ☒ **Holes** at least 3mm diameter
- ☒ **Overhangs** less than 45 degrees
- ☒ **Bottom** has flat surface for bed adhesion

Advanced Techniques

For Experienced Designers

- **Chamfers** and **fillets** for smooth edges
- **Text** and **engravings** for personalization
- **Multiple parts** that fit together
- **Moving parts** (if you're feeling ambitious!)

Teacher Consultation

Get Expert Advice

Bring your design to teacher for:

- **Printability** check
- **Improvement** suggestions
- **Technical** problem solving
- **Advanced** feature help

Peer Review

Learn from Each Other

Partner up and:

- **Show** your improved design
- **Explain** what you changed
- **Ask** for feedback
- **Give** constructive suggestions

File Preparation

Getting Ready to Print

Export Process: 1. **Select** your best design 2. **Click** “Export” 3. **Choose** “STL” format 4. **Name** it clearly 5. **Download** to save

File Naming

Make It Clear

Good names:

- "Sarah_Pencil_Holder_v2.stl"
- "Mike_Phone_Stand_Final.stl"
- "Emma_Keychain_Improved.stl"

Bad names:

- "Design1.stl"
- "Untitled.stl"
- "Thing.stl"

Quality Check

Before You Export

Ask yourself:

- **Is this** my best work?
- **Would I** be proud to show this?
- **Does it** solve the problem I identified?
- **Is it** ready for printing?

Print Queue Planning

Managing Expectations

- **Not all** designs can be printed (time limits)
- **Teacher** will select 2-3 per class
- **Best designs** get priority
- **Everyone** will see results next lesson

Documentation

Record Your Process

Write down:

- **What** you improved
- **Why** you made changes
- **What** you learned
- **What** you'd do differently next time

Reflection Questions

Think About Your Journey

- **What** was hardest about improving your design?
- **What** new skills did you learn?
- **How** has your thinking about design changed?
- **What** would you tell a new student?

Show and Tell Prep

Getting Ready for Next Lesson

Think about:

- **How** you'll present your work
- **What** problem your design solves
- **What** you're most proud of
- **What** you learned in the process

What We Accomplished

Today's Learning

- **Analyzed** printed objects critically
- **Improved** existing designs
- **Applied** design principles
- **Prepared** files for printing
- **Documented** our process

Coming Up Next

Lesson 6 Preview

“Reflection and Future Thinking”

- See your final prints!
- Present your best work
- Reflect on the whole journey
- Think about future possibilities

Cleanup Time!

5 Minutes to Pack Up

- **Save** all your work
- **Export** your final design
- **Clean** your workspace
- **Put away** materials

Outstanding improvement work today!