Tales & Trinkets: A 3D Workshop

Overview

This program is designed for librarians and volunteers to run a beginner-friendly 3D-printing session with children. The activity introduces core concepts of 3D printing and guides participants through creating their own character-themed keychain.

- Intro: 10 min
- Image selection + Relief Maker: 10 min
- Slicing: 15–30 min
- Printing: 30–60 min depending on size
- Wrap up: 5–10 min

Introduction to 3D printing

What does “3D” mean?

3D means three-dimensional, something that has height, width, and depth. Unlike a drawing on paper (which is flat/2D), a 3D object can be held and viewed from all sides.

What does a 3D printer do?

A 3D printer builds an object layer by layer using materials like plastic. It follows a digital file to slowly "print" the object into a solid shape.

What can we use 3D printing for?

Some examples:

- Toys and figurines
- Tools and replacement parts
- Prototypes and inventions
- Art and sculptures

Encourage kids to brainstorm additional ideas.

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Today's activity: character creation

Participants will create a custom keychain featuring a character from their favourite book.

Step 1: Choose a character

Ask participants to think of a favourite book character. They will search online for a clear image of that character.

Step 2: Upload the image to MakerLab Relief Sculpture Maker on Makerworld.com

1. Open the Makerworld website, go to MakerLab and select Relief Sculpture Maker.
2. Drag and drop or upload the selected image.
3. The tool will generate a 3D model of the character.
4. If the result is not what the participant likes, encourage them to
    - try a different image
    - switch styles (logo, anime, portrait)

Step 3: Customize the model

Participants can adjust

- **Background:** Choosing a background makes it easier to add text later (like their name or the character's name).
- **Thickness and depth:** In the configuration section, set thickness and depth. A standard setting is 5 for each.
- **Frame:** If desired, they may add a frame around the design.

No need to add text to the model at this stage—text will be added later in the slicing program.

Step 4: Add a hook

1. Go to the **Accessory** tab.
2. Select **With Hook**.
3. Choose any hook style.

Step 5: Export the file

Export the model as a **.3mf** or **.stl** file depending on what your printer supports.

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Prepare for printing (using slicing software)

This guide uses **Bambu Studio**, but any slicing software works.

Step 1: Open your file
In the slicing program, open the project file you just exported.

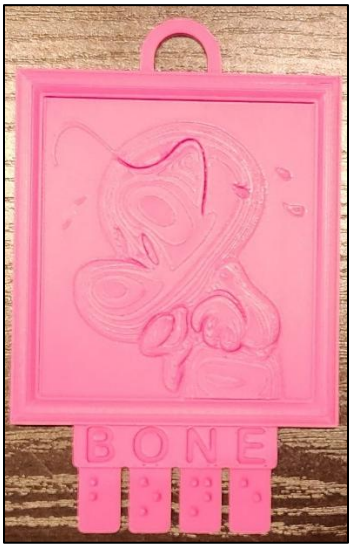
Step 2: Import the alphabet files
Import the alphabet files into the same project.

Important note about scaling:
When adding letters in the next step, **do not resize the letters themselves**. Keep the letters at their default size so they remain readable and print ready. Only resize your **character model** if needed. After you've added all text and merged everything, you can scale the **entire finished keychain** larger using the scale tool (but not smaller).

Step 3: Select and arrange letters

1. Choose the letters you need. (Note: the letters have print and braille on them.)
2. If you need multiples, right-click and select **Clone**.
3. Delete any unused letters.
4. Begin orienting letters onto the character model.

   Make sure letters do not sink into the model too deeply—each letter should still be fully visible from the top surface.



Example: If your character is Bone,

- select the letter "B."
- hold the shift key and select both the keychain model and the letter.
- right-click and choose **Merge**.

Step 4: Position the letters

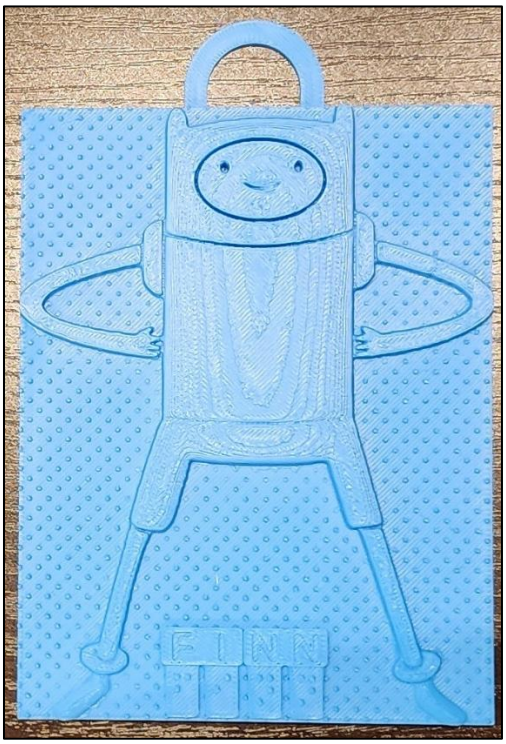
1. Open the **Objects** tab.
2. Select each letter.
3. Use **Move** tools to raise and position letters, so they sit correctly on top of the model. (This can be done manually or by entering coordinate values for precision.)
4. Repeat for each letter.

Step 5: Slice the model

Slice the print plate to make sure

- nothing is floating
- all letters are properly merged
- nothing is shifted out of place

Optional: Provide strings or metal rings so kids can attach their keychains to bags, zippers, or backpacks.



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Wrap-up discussion

After printing, gather the group for a short reflection:

- What part of the process was the most fun?
- What was challenging?
- Did anything surprise them?
- What else do they think people can make with 3D printers?

Encourage creative thinking—examples may include

- assistive devices
- board game pieces
- jewellery
- mini sculptures
- phone stands

Braille awareness component

This activity is not only fun and tactile, but it also connects directly to how some people experience stories. For many readers who are blind or have low vision, touch is the only way to explore the shapes of their favourite characters. Being able to feel a design like the raised details on these keychains can make stories and characters come alive in a meaningful way.

It goes even deeper: without braille, many people wouldn't be able to read those favourite books at all. The braille we may add to our keychains mirrors the same system that allows individuals to enjoy stories, follow instructions, learn independently, and access the world of reading.

Invite participants to explore any raised braille on the keychains and reflect on how important tactile design and accessibility truly are.

Program notes for librarians/volunteers

- Ensure all computers have reliable internet access for image searches.
- Have slicing software installed in advance.
- Allow extra time for printing—you may need to stagger print jobs or have participants pick up their prints another day.
- For safety, ensure only staff or volunteers handle removing prints from the build plate, as the printer and tools may still be hot.
- Consider displaying finished keychains in the library for a week as a mini showcase.