

This is one of three activities offered to engage participants with the works of Rose-Aimée Bélanger. Each activity aims to deepen the participants' understanding and appreciation of the artwork, while developing their creativity as well as visual and cultural literacy. Activities can be readily adapted to accommodate different abilities and levels of learning.

Activity 1: Make Your Own 3D Printed Model¹

In this activity, we will explore how 3D printing works by creating a 3D model of a Rose-Aimée Bélanger sculpture.

How 3D Printing Works

With 3D printing, we can create physical objects - just about anything we can think of.

The 3D printer makes an object by printing layer upon layer of material - often plastic - to build it up. When plastic is used as the printing material, the 3D printer works a bit like a glue gun - an analogy that often helps students understand: we feed a plastic filament into the printer, where it melts and comes out in layers, just like the lines of hot glue in our glue guns.

You can also use a deck of cards to help your students understand the way 3D printing works. Hand them one card, and ask them to show with their fingers how thick it is. Then have the students lay out all the cards, end-to-end, across the floor. Talk about whether the cards are still the same thickness, and how they have changed by laying them out. Then stack the cards back up. As you go one-by-one, talk about how this is the way the 3D printer works: there are many layers that make up their model, and the printer simply stacks layer after layer to eventually create their design.

Materials

We will be using plastic filament for our printers, but plastics are only one of several commonly used materials in 3D printing, including:

Plastics: Polylactic acid (PLA), acrylonitrile butadiene styrene (ABS), and polyethylene terephthalate (PET) are some of the most commonly used plastics in 3D printing. These materials are relatively inexpensive and easy to work with, but they may not be as strong or durable as some other materials.

Metals: 3D printing with metals allows for the creation of complex, high-strength parts. Common metals used in 3D printing include steel, aluminum, titanium, and copper.

Ceramics: Ceramic materials can be used in 3D printing to create objects with a high level of detail and a smooth surface finish.

Living cells: 3D printing with living cells, also known as bioprinting.

¹ Activity and information adapted mainly from three sources:

[A Kids Guide to 3D Printing](https://moonpreneur.com/blog/a-kids-guide-to-3d-printing/) < <https://moonpreneur.com/blog/a-kids-guide-to-3d-printing/> > accessed 2023-09
[What is 3D Printing](https://www.independent.co.uk/tech/what-is-3d-printing-b1821764.html) < <https://www.independent.co.uk/tech/what-is-3d-printing-b1821764.html> > accessed 2023-09
[3D Printing for Kids](https://teachyourkidscode.com/3d-printing-for-kids/) < <https://teachyourkidscode.com/3d-printing-for-kids/> > accessed 2023-09

The ability to use such a variety of materials opens the possibilities of using a 3D printer to create just about anything: simple shapes, plastic toys, metal machine parts... recently, scientists have even been developing ways to make human body parts.

Printing Your Sculpture

3D printers can be used to create copies of something that already exists in three dimensions, such as a Rose-Aimée Bélanger sculpture.

For our project at the Temiskaming Art Gallery, we worked with photographers and software professionals to create 3D print files of several sculptures. This was done by taking many high-quality photographs of the sculpture, then using special software to create a digital model. These files were converted into a format that our printers can use to print objects using plastic filament.

You can choose how precise you want your printing to be - the more detail involved, the longer it will take. 3D printing can take anywhere from less than an hour to many days, depending on how complicated and big it is.

Use the digital file to print your 3D model using the 3D printer. Once you have chosen your file and settings, it's now a matter of waiting and watching - which can be fascinating!

This is the 3D printer we have at the Temiskaming Art Gallery, along with an original Rose-Aimée Bélanger sculpture, and a miniature 3D printed version:



Now that your sculpture is ready, you can “finish” it: make small fixes to make it look better. This might involve removing material that the printer placed to support the model as it was printing, or smoothing any particularly rough surfaces.

Your 3D printed Rose-Aimée Bélanger sculpture is ready to enjoy... or go one step further, and paint it (Activity 2)!