WAABISHKAA-MAKWA

ARTS | TECHNOLOGY | INSPIRATION

DESIGN, CREATE, AND CONNECT: PROJECTS ALIGNED TO LEARNING

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Waabishkaa-Makwa at R.B. Russell Vocational High School was created to address the need for students and the community to access transformative career-building skills, pathways to post-secondary education, entrepreneurship, and trades, family-centered wraparound supports, and a revitalized cultural and educational hub.

As the first of its kind in Manitoba, Waabishkaa-Makwa focuses on culture and creation while using technology as a powerful tool to achieve these goals. Students actively use the space to deepen their learning in STEAM, graphic arts, and textile design-applying hands-on, creative, and technical skills that prepare them for future education and career opportunities. By connecting students to their heritage while equipping them with cutting-edge skills for the future, the lab empowers the next generation of creators and innovators.

Student Workflow

1. Idea and Inspiration Gathering

» Students explore what they want to create

2. Design Planning and Rough Sketching

» Sketch ideas, identify who it is for, and consider constraints (size, materials, etc.)

3. Create or Import Digital Artwork

» Digitize their design using graphics software, CAD tools, etc.

4. Materials Selection

» Choose the best material for your design (fabric, paper, wood, filament, vinyl, etc.)

5. Safety Check and Space Preparation

» Clear the workspace

» Put on any required PPE

» Check the machine setup

» Ask for teacher approval

6. Prepare Equipment

» Follow startup procedures

7. Operation of Equipment

8. Troubleshooting and Iteration

9. Post Processing

10. Quality Check and Cleanup

11. Reflection and Sharing

Equipment

Phase 2 Kniterate Digital Knitting Machine

Description

It turns your digital designs into knitted garments automatically. A slower and more creative way to produce and consume the clothes we wear.

Project Ideas

- Create scarves or beanies with traditional patterns (e.g., Métis floral motifs).
- Create pieces that tell seasonal stories such as full moon. Produce knitted squares contributed by students to assemble a community story blanket.

Learning Examples

- Math — patterns, ratios, counting stitches, geometry.
- Art and Design — pattern design, cultural visual expression .

Equipment

Embroidery Machine

Description

Create new projects or add a nice upcycling touch with 100 built-in embroidery designs, 18 monogramming font styles, 140 frame pattern combinations, 50 lettering fonts, 50 built-in utility stitch designs, and 10 buttonhole styles in three sizes. Send custom designs from a PC using Design Database Transfer.

Project Ideas

- Embroider clan symbols, animals, or language phrases onto jackets or bags.
- Design and stitch quotes, custom designs and add onto clothing.

Learning Examples

- Language .
- History — stories and lineage.
- Entrepreneurship — sell creations.

Equipment

Epson SureColor DTG/DTF Printer

Description

Switches between printing directly on cotton/cotton-blend garments and transferring designs via film to diverse materials, including polyester, nylon, and uniquely shaped items.

Project Ideas

» Print custom designs directly onto tshirts featuring Indigenous language, land acknowledgments, or artwork. Produce school t-shirts (Bike Repair, etc.).

Learning Examples

» Language.

» History.

» Entrepreneurship — branding, pricing, marketing, and printed apparel.

Equipment

Dye Sublimation Printer

Description

Ideal for personalizing awards, stickers, mugs, mouse pads, and more.

Project Ideas

» Create vibrant ribbon skirts, sashes, or ceremonial pieces with sublimated designs.

Learning Examples

» Art — digital art creation, color management.

» Cultural Education.

» Technology education — learning new skills about heat transfer and material science.

Equipment

Cricut

Description

Cricut Maker 4 works with 300+ materials, including leather, wood, vinyl, iron-on HTV, card stock, stickers & so much more. This machine not only cuts, but it also draws, foils, scores, engraves, debosses, perforates, & more.

Project Ideas

» Cut iron-on vinyl for custom patches or appliqués.

» Custom designed stickers for helmets and bikes.

Learning Examples

» Language — create flash cards.

» Graphic Arts — vector design, layout.

» Math — measurement, scaling, spatial.

Equipment

Phase 2 HP DesignJet Z6 44”

Description

A high-speed, 6-color large-format inkjet printer (pigment-based) designed for professional photographers, graphic designers, and GIS professionals to produce high-contrast, water/fade-resistant prints. The wide-format inkjet printer will enable students to print photography, fine art, graphic designs on posters, and signs. Use the wide-format inkjet printer and wide-format laminator to make professional banners, posters and signage. The laminator adds a protective coating to prints, posters, banners, enhancing durability and visual appeal.

Project Ideas

» Custom designed posters and banners. School event posters, science fair posters.

» Students produce professional digital art.

» Student led print shop.

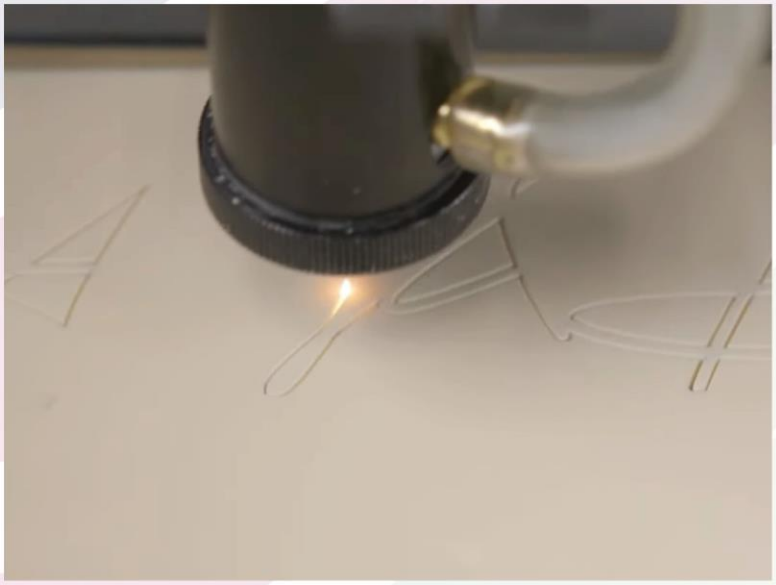
Learning Examples

» Science — poster design for scientific method communication.

» History — Visualizing indigenous historical events and timelines.

» Math — Data visualization posters and graphing, images.

» Graphic Arts — “book to poster”.



Equipment

Laser cutter

Description

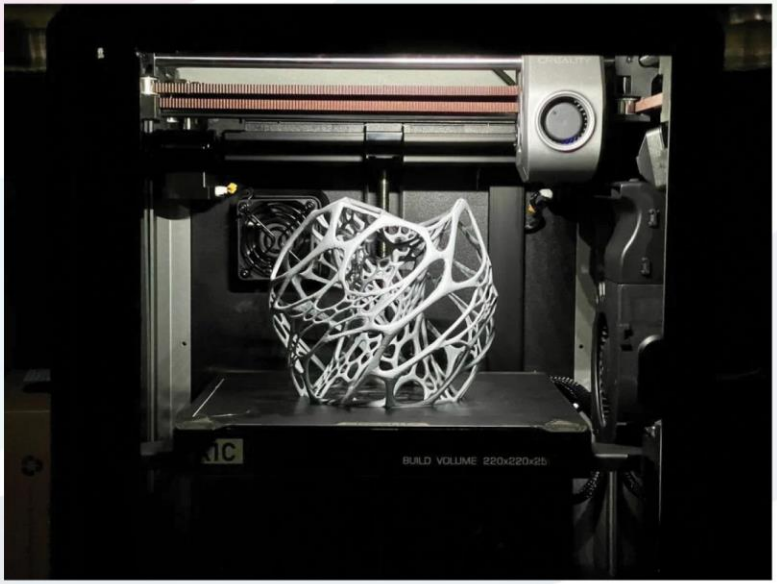
The Epilog Fusion Maker 36 is an entry-level, industrial-grade CO2 laser cutter/ engraver with a 36" x 24" (914 x 610 mm) work area. It offers 40W or 50W, 60 IPS (1.5 m/s) engraving speeds, 5G acceleration, and the IRIS Camera system for easy, precise artwork placement on materials like wood, acrylic, and fabric.

Project Ideas

- Etch custom designs on wood for wall art or school signage.
- Create puzzle maps.
- Student designed products — bead work holders.

Learning Examples

- STEM — Engineering design, material properties.
- Cultural Education — Storytelling through wood.
- Entrepreneurship — Product Prototyping.



Equipment

3D Printers

Description

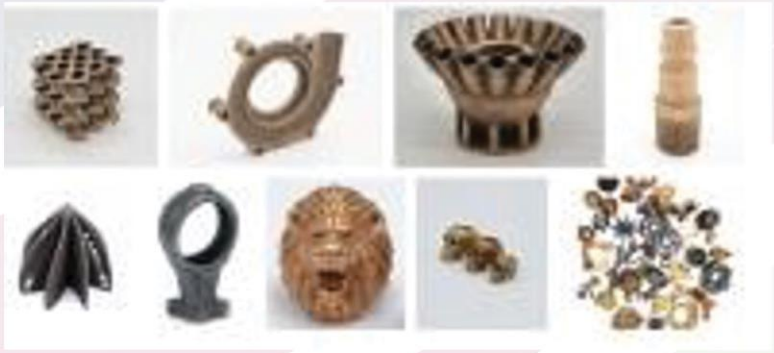
The Creality K1C is an enclosed, high-speed 3D printer designed specifically for enhanced, abrasive-resistant carbon fiber filament printing. It features an all-metal nozzle, an AI camera for monitoring, and automatic calibration. It has a 220 x 220 x 250 mm build volume.

Project Ideas

- Custom design and print: bead looms, beading trays, jigs and fixtures for bike repair workshops. Print replacement bike parts (values).
- Reiterate designs and document learnings for a Science Project.

Learning Examples

- STEM — mechanical design, CAD modeling, prototyping. Aerodynamics: 3D modeling, scale, weight management.
- Test wind, analyzing lift, and drag coefficients.
- Visual representations of Kidney, Heart, and Frog dissection.
- Math — dimensions, geometry, scale
- Culinary — measurements.
- History — comparing traditional technologies with modern methods.



Equipment

Phase 2 Kiln

Description

The Virtual Foundry Sintering Kiln allows users to sinter printed metal, ceramic and glass objects with the click of a button. This kiln is designed to reach a maximum temperature of 1288°C/2350°F. This system allows users to sinter a number of The Virtual Foundry 3D printed materials including Bronze and Copper.

Project Ideas

- Medal medallions, Metis floral motifs. Use metal filament to 3D print the design and debind and sinter process creates the metal piece.
- Traditional tools reimagined in metal. Metal beadwork tools.
- Miniature Engineering Models — Small scale engineering models and bridge structures.

Learning Examples

- Science — Chemistry of firing, heat treatment, and materials. Debind and metal sinter process. Test strength before and after heat treatment.
- STEM — material science, structural strength, thermal treatment effects.
- History — Indigenous engineering principles.
- Math — Geometry, Ratios.

Equipment

Phase 2 Flatbed printer

Description

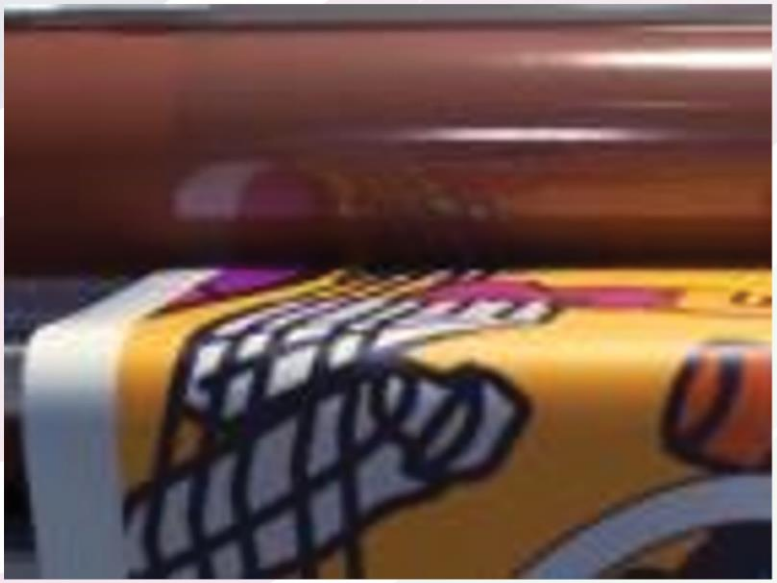
The flatbed desktop UV printer will allow students to print vibrant graphics and detailed designs onto a wide range of objects.

Project Ideas

- Print custom designs directly on material, canvas, wood, leather, bike accessories etc. and personalize bike accessories.
- Produce high-end art prints of student digital designs.

Learning Examples

- Art, graphic design, mixed media printing, color accuracy.
- Technology Education — Material compatibility and digital workflow.
- Entrepreneurship — create custom products to sell.



Equipment

Phase 2 Laminator

Description

Designed for finishing, protecting, and enhancing printed graphics. It specifically improves adhesion on UV-LED prints and reduces “silvering” (trapped air bubbles) with heatassisted technology.

Project Ideas

- Laminate cards for outdoor learning.
- Laminate language cards.
- Wallet cards with visual representation of Love, Respect, Courage, etc.
- Laminate posters for school.

Learning Examples

- Science.
- Land-based education.

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