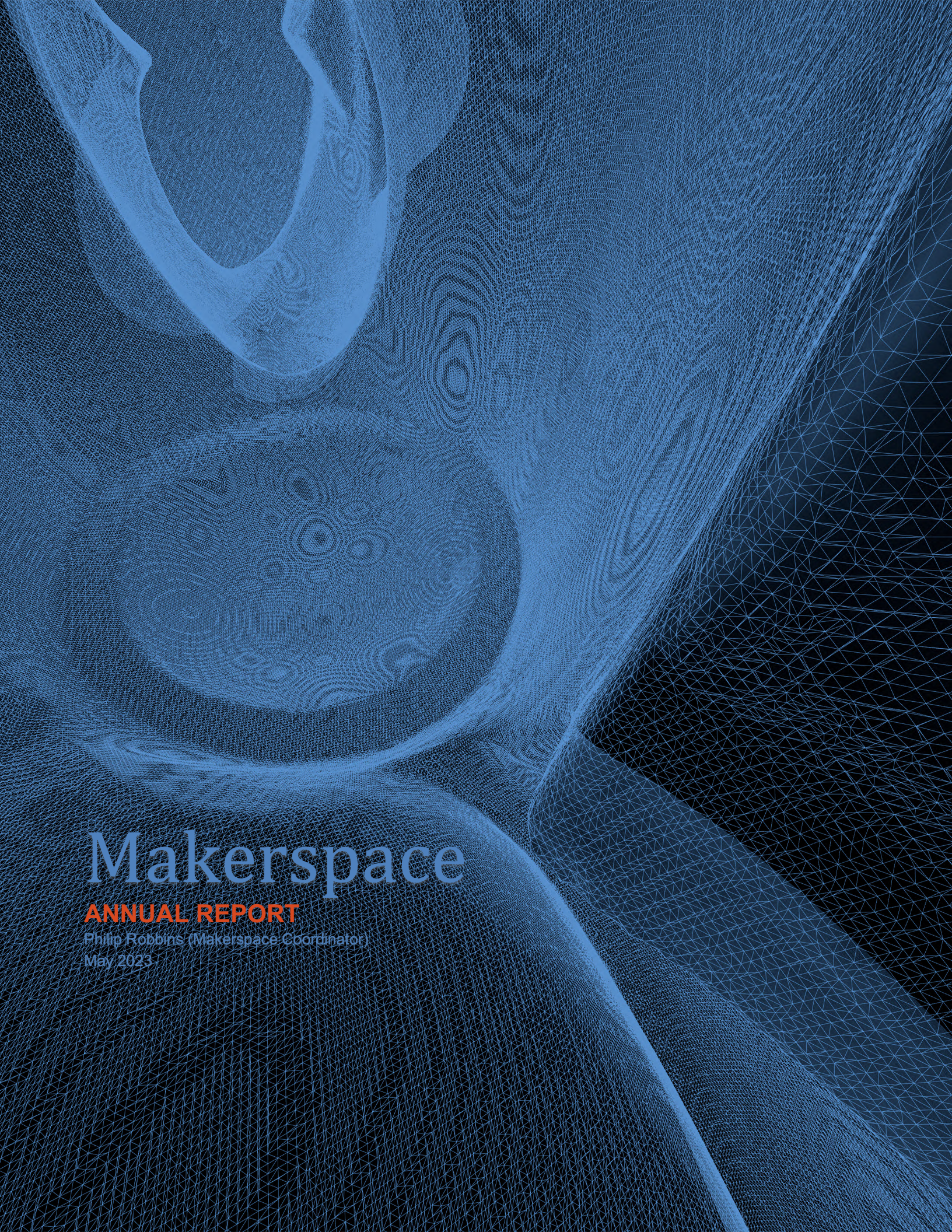


Makerspace

ANNUAL REPORT

Philip Robbins (Makerspace Coordinator)

May 2023

2022-2023
Overview

The Langara Makerspace has continued advancing its broadly based outreach and engagements through 2022-2023. We have connected with multiple external agencies on funded projects (Neil Squire Society, City of Richmond, ARC projects) and through our involvement with Langara's NSERC Mobilize grant application are developing larger partnerships on a wide range of opportunities (Museum of Vancouver, City of Richmond, Neil Squire).

We continue engaging with the Langara Student population through our ongoing series of introductory Makerspace workshops, by attending and presenting at multiple Langara events and through hiring multiple students from a range of departments (Design Formations, Computer Science, Fine Arts) on SWOP, WOK , NSERC and SSHRC funded projects.

We have presented the Makerspace to a wide cross-section of the Langara community through formal events (Mini- Conference, Applied Research Day, Semester Kickoff, Back to School Department Faire, Creative Arts Open Houses) and multiple informal Makerspace events (Makerspace tours, overviews, wide-ranging hands-on workshops, and Buildathons)

Building on various threads of research flowing through the Makerspace, we have attended academic conferences including Reimagining Climate Futures: a deliberative dialogue on circularity, at the SFU's Wosk Centre for Dialogue, and the Inclusive Makerspace Conference at UBC. Also, the Makerspace has hosted, as part of an inter-institutional SSHRC grant exploring circularity and Maker spaces/cultures, academic partners from Thompson Rivers University, The University of the Fraser Valley, Toronto Metropolitan University, and Memorial University as we co-develop research on Circularity and the Canadian Economy with an emphasis on the pivotal place of Makerspaces.

Langara's Makerspace is a highly dynamic resource, with a constant flux of users, objectives, and outcomes. We continue to strategically build on these cross-disciplinary, cross-institutional, and cross-sectoral opportunities.

General Timeline

- Library Technology tour - **August 2**
- Meeting and Makerspace introduction for Paula Burns – **August 29**
- P+C intro and workshop– **September 7**
- Semester Kickoff - Langara engagement - **September 8**
- Hired two SWAP students – Diego (computer science) and Jessica (design formations) - **September 12**
- Applied Research Club formed – **September 22**
- Install "Heat Islands" project on Langara campus with hired students– **September 27**
- Meet with Graeme Joseph to discuss First Nations micro credentialling – **October 7**
- Library technology students tour - Makerspace overview– **October 11**
- Take your kids to work day – Workshop on design thinking and digital fabrication - **November 2**
- Creative Arts Open House – Makerspace tour – **November 9**
- Reconnect with City of Richmond (from Fine Art open house) - **November 14**
- Nursing department meeting presentation - Makerspace overview - ZOOM - **November 17**
- Online Meeting with Richmond – Marcos Alejandro Badra - Program Manager, Circular Economy - **Nov 21**
- Introductory Meeting – Simone (Langara Foundation), (Langara Foundation) **November 25**
- 3D scanning and printing – Design Formations – **December 12**
- Back to School, Department Fair – **January 9**

- Latin American student event – Carnivale! – **January 26**
- Tour of Makerspace by City of Richmond departments connected to circularity. -**January 26**
- Attend two day "Climate Futures" conference SFU - WOSK center – **Feb 19-20**
- Updates to website images **February - ongoing**
- Updates to Telemetry TV images **February - ongoing**
- First Neil Squire funded Event - Makers Making Change – Applied Research Club – **March 10**
- Canadian Association of Girls in Science (COGIS) event in Makerspace and A273 – **March 11**
- Second Neil Squire Event - with electronic workshop by Diego (SWAP) – Applied research Club - **March 20**
- Applied Research Day – Two booths presenting ARC funded Textile research (City of Richmond) and Scanning printing (ECUAD) collaboration. **March 23**
- Langara Mini conference– presenting two sessions in Makerspace on Sustainability – Attended "ecologizing education" **April 2**
- 3K Service contract with City Richmond – hire student to design, fabricate, install- work through – **May**
- Conduct Vancouver Circularity Tour and Langara Makerspace workshops for SSHRC partners - **May 5-8**
- Reconfigured Makerspace with ongoing plan to be a more welcoming and fluid workspace (based on UBC Inclusive Makerspace conference presentation) – **May-ongoing.**
- Attended 2-day UBC Inclusive Makerspace Conference - **May 24-25**

2023-2024Planning

The Makerspace continues to pursue multiyear grants – in collaboration with the Applied Research Centre - that will help connect Makerspace technologies and research interests with regional circularity goals through municipal partnerships (City of Richmond), build a stronger community of innovative and ethically minded makers through partnering with NGO's (Neil Squire Society), and help bolster civic sustainability and EDI goals through collaboration with Vancouver's cultural sector (Museum of Vancouver).

We continue to explore ways to expand our user base and to diversify our community of users. In consultation with the Teaching and Curriculum Development Centre we are exploring Microcredentialling to address student skill building, and to flexibly respond to and address the training interests of external partners.

Additionally, we are exploring how we can best mobilize student knowledge and expertise with the creation of student led workshops beginning initially with introductions to electronics and Arduino technologies.

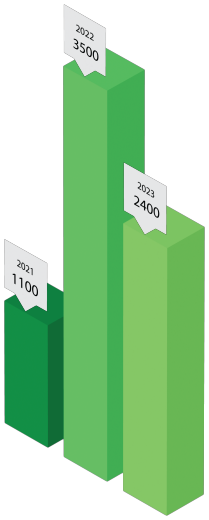
These new initiatives will continue adding strength and diversity to Langara's Makerspace as an adaptive and welcoming nucleus for research, community engagement, and mindful creative inquiry.

Participation (May 2022 to May 2023)

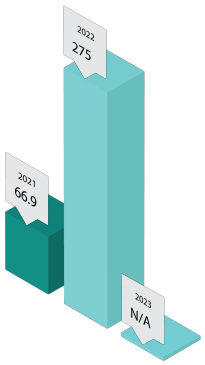
Numbers for Makerspace May 2022 to May 2023 (based on equipment signups, workshop signups & classes):

Workshops attendance	- **472**
Total cumulative daily visit (equipment sign-up, classes, workshops)	- **2061**

YOUTUBE SATISTICS (MAY 2022– MAY 2023)

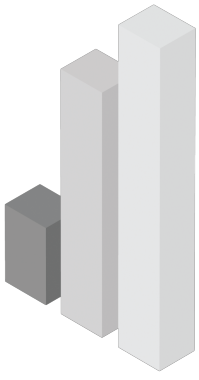


PAGE VIEWS

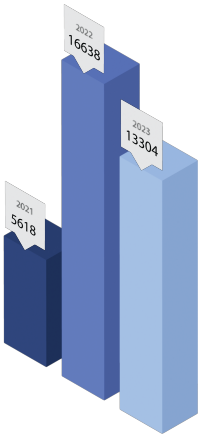


WATCH TIME
(Cumulative Hours)

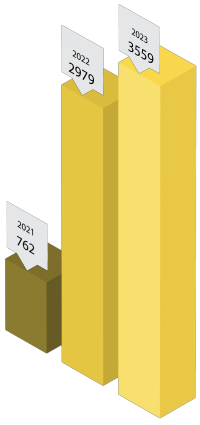
WEBSITE ANALYTICS (May 2022 – MAY 2023)



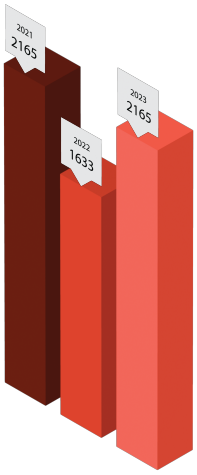
2021-2022-2023



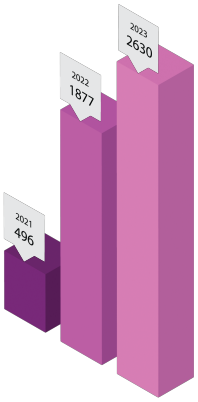
WEBSITE VIEWS



SESSIONS



NEW USERS
(New IP's)



USERS
(Returning IP's)

Faculty Research Projects

Through the ongoing relationships between the Makerspace, The Applied Research Centre, and Langara Faculty we continuing to co-build several funded, curricular, and personal research projects.

• SSHRC – Canada's Future Ideas Lab	- up to $250K (for two years) begun and ongoing
• Neil Squire Buildathons (X2)	- Funded partnership with the Applied Research Club
• MOBILIZE (Neil Squire, CoR, MoV)	-up to 450K per year over 5 years (across institution)
• Custom lever arms for Chemistry	- Faculty design and production of retrofit device
• 3D Terrain	- Faculty research into CNC production methods
• Applied Research Day	- Two booths featuring textile upcycling and object digitization.
• DF – Scanning and printing	- Faculty personal project digitizing and printing.

Students Hired

With the relaxation of covid restrictions multiple students have been hired to work as SWAP, WOK, and Research Assistants. The Makerspace hired two SWAP students to assist with general operational maintenance of the Makerspace. For the 2022-2023 Fall and Spring semesters one student from Design Formations and another from Web and Mobile were hired as SWOP's. Multiple students have been hired as WOK students to advance applied research projects and external partnerships (Neil Squire, CoR). The coordinator hired three Fine Art students to assist with preliminary proof-of-concept work on two ARC funded research project (textile upcycling [CoR], digitizing and 3D resin printing [ECU]). Growing from this research, one Fine Art student was hired to design, test, fabricate, and install an unobtrusive retrofit AC adaptor for a City of Richmond heritage building. Additionally, one former Fine Art graduate was hired as a CUPE Research Assistant for the ongoing SSHRC funded "Canada and the Circular Economy" project.

Outreach - Collaborations

There have been multiple treads of outreach for the Makerspace both within and external to the institution.

Through 2022- 2023 the Makerspace has:

- Developed a pending partnerships with MOV SAGE program that examines sustainability and circularity in exhibit design.
- Developed a second pending research partnership with the MOV exploring digitization and printing of selected artifacts from the MOV collection.
- Developed a pending applied project with City of Richmond in relation to a pillar of their Civic Circularity strategy (textile waste)
- Working with students we designed, tested, manufactured, and installed a retrofit AC adaptor into a heritage building for the City of Richmond. Funded by the CoR.
- Partnered with the Neil Squire Society on a project that enabled two buildathon events with the Langara community invited to produce assistive devices for Neil Squire. Funded by Neil Squire
- Conducted two Langara Mini Conference Presentations on Sustainability/Circularity incorporating hands on workshops based on current Makerspace textile research.
- Conducted Multiple Makerspace tours for the Library Technology program.
- Conducted HR tours and demos.
- Participated with Langara Engagement in semester kickoff events.
- Engaged with Graeme Joseph to discuss First Nations micro credentialling.

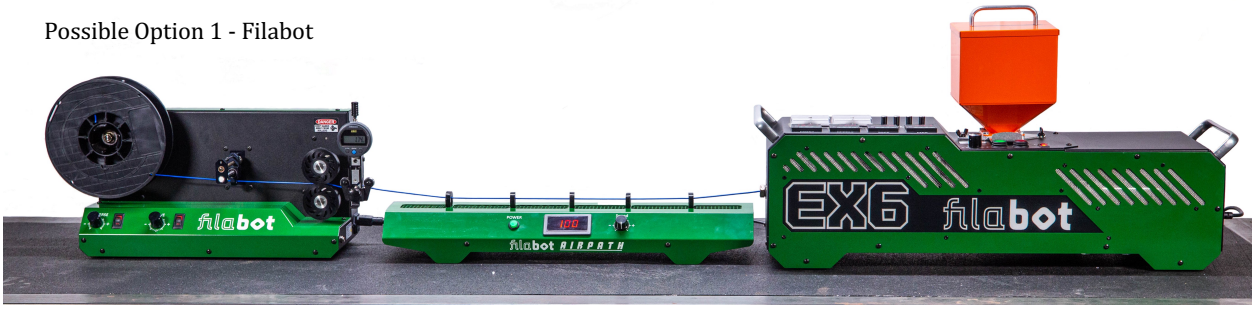
- Conducted presentation to Nursing department on Makerspace opportunities.
- Hosted second Take your Kids to Work Day – Finding solutions to real issues through design thinking, and Makerspace resources.
- Participated in Creative Arts Open Houses
- Introductory Meeting – Met with new director of the Langara Foundation to provide overview.
- Back to School, Department Fair – Participation with Langara Engagement events
- Makerspace tour by City of Richmond departments – Developing circularity research relationships.
- Applied Research Day – Two booths presenting Makerspace funded applied research.
- Langara Mini conference– Presented two sessions on Sustainability, Circularity and Maker cultural

New Technology

The Makerspace continues to explore new and innovative technologies that are relatively inexpensive, capable, and user friendly. Our general aim is to expand our inter-connected range of materials/technologies and the resulting sophistication of the objects we can produce and the questions we can address.

We are currently exploring the possibility of a range of semi-industrial plastics filament extruders to expand our ability to upcycle our own plastic filament directly from our 3D printed plastic waste. These machines will also enable research into multiple types of waste plastic and their ability to be turned into printable filament and/or injection moulded objects.

Possible Option 1 - Filabot



Possible Option 2- Filafab

Summary

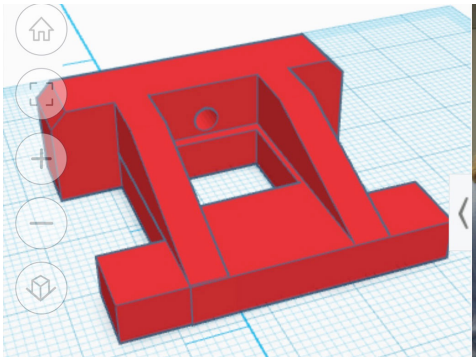
The Makerspace continues to dynamically grow and evolve its foundation of welcoming innovation, fostering technical proficiency, and exploring the broad application of new digital resources to meaningful opportunities.

Throughout 2022-23 the Makerspace has continued to: (1) maintain broad, cross disciplinary access and inclusion, (2) foster technical and conceptual competencies through hands-on exploration (3) co-build new forms of opportunity through research and partnership, both within and external to, the institution.

Digital Translation Research

Digital Output - CNC

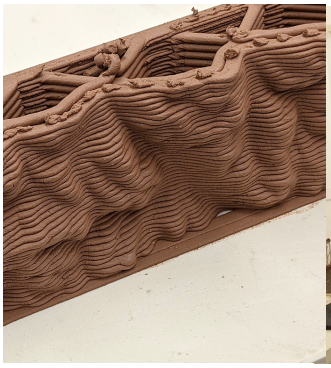
Textile CIrcularity Research



Facilities - Design/Test/Manufacture

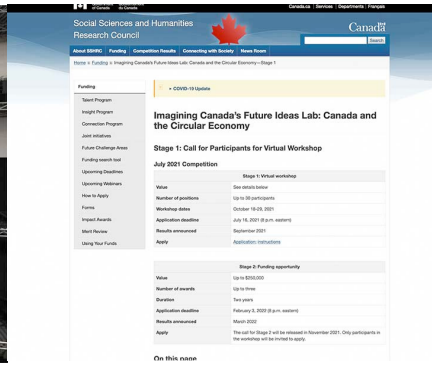
Makers Making Change - Neil Squire Partnership

Facilities - Repair



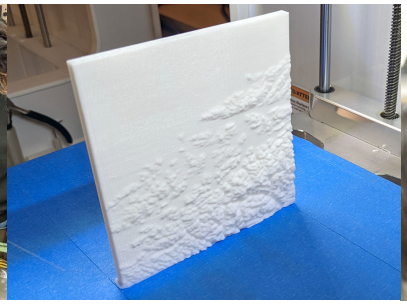
Ceramic Digital Printing

Carnivale! Latin American Students Association



Circular Economy Research

Carnivale!



Georgraphy Assignment-Print Canada

Buildathon Events