



Makerspace

MAKERSPACE – ANNUAL REPORT

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THE COLLEGE OF HIGHER LEARNING.

Langara.

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Startup Planning (2016–2017)

2016 saw the implementation of the initial components of the Makerspace business plan. With the hiring of a coordinator, a strategy was developed for the purchasing of foundational equipment, the procurement of space, and the initiation of the first public events.

Renovations and Equipment (2017–2018)

Throughout 2017, the Makerspace settled into a permanent location (A268). Through multiple renovations (wall reconfiguration, new flooring, updated power, revised doorways, additional storage, new lighting) and new equipment acquisitions, the space grew to a multifunctional, institutional resource. During this period, an additional staff member (Makerspace Attendant) was also hired. This time also saw the first curricular use of the space, in conjunction with Studio 58, the first research project, with Computer Science, and the hiring of the first SWAP student.

“The second year of development will focus on establishing a permanent makerspace on campus, as informed by the successes and challenges of the pilot period.” **Langara Makerspace Business Plan 2016, P.7**

2017–2018 Collaborations/Participation

In 2017, the Makerspace saw considerable expansion. The Makerspace iWeb site came online (<https://iweb.langara.bc.ca/makerspace/>) providing a community access portal to our mission statement, a gallery of ongoing projects and research, technical information, how to guides, and access to online sign-up for our range of workshops. The temporary Makerspace Attendant position transitioned to full-time Makerspace Technician, allowing access five days a week. The Makerspace Coordinator position moved from one-quarter to one-half time. Concurrently, the Makerspace saw considerable participation from the Langara community.

- | | |
|---|--------------------------|
| • Design Formation | classes |
| • Studio 58 | classes/research |
| • Fine Art | classes |
| • Professional Photography | classes |
| • Web & Mobile App Design & Development | classes/output |
| • Engineering | classes/research |
| • Computer Science | output/research |
| • Communications and Marketing | output |
| • Health Sciences | output |
| • English | research |
| • International Education | tours/collaboration |
| • Langara College Foundation | fundraising |
| • Applied Research Centre | professional development |
| • Education Technology | collaboration |
| • Journalism | interviews |
| • Geography | research |
| • Biology | research |
| • Enrollment Services | output |
| • Social Innovation Office | collaboration/research |
| • Applied Research Centre | collaboration/research |

“Integrate Makerspace tools and technologies into curriculum and classroom experience.” **Langara Makerspace Business Plan 2016, P.6**

Langara College Makerspace

Workshops

Workshops available to faculty, staff, and students have been developed to introduce the fundamental software and hardware at the Makerspace. These workshops have been attended by a broad cross section of the Langara community. In 2019, two new workshops were added to cover the CNC router and the new Next Engine 3D scanner.

General Workshops (Laser, 3D Printer, Vinyl Cutter)

Number of workshops 20

Department Specific Workshops (Level 1)

Audio Visual 1

Fine Arts 1

Ed Tech 1

Facilities 1

Department Specific Workshops (Level 2)

Audio Visual 1

Overall Number of Participants 225

“The Makerspace will support innovation and quality in teaching and curriculum design, advance the application of innovative technologies that support teaching and learning, and encourage cross-disciplinary dialogue and action.” Langara Makerspace Business Plan 2016, P.6

Published Research

Through outreach and collaboration, the Makerspace has hosted a number of first- and second-year engineering classes. A wide range of working models and prototypes have been produced, leading to published papers.

Engineering – “Development of a Prototype for an Origami-Based Portable Solar Panel System” (published)

Engineering II – “Makerspaces in First Year Engineering Curriculum” (pending)

“Partnership with faculty to connect curriculum with Makerspace tools and technologies.” Langara Makerspace Business Plan 2016, P.9

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Faculty Research Projects

Through the ongoing and developing relationship between the Makerspace, the Social Innovation Office, and the Applied Research Centre, the Makerspace has hosted a number of funded research projects.

| | |
|--|-----------|
| Prudohm Library (English) | completed |
| Heat Islands (Fine Arts, COV, CityStudio) | ongoing |
| POV (Fine Arts, Port of Vancouver) | ongoing |
| Ocean Plastics (Fine Arts) | current |
| Styrofoam Reuse (Archeology) | pending |
| Ocean Level Monitoring | pending |

These projects have been funded through the Canada Council, Langara's Applied Research Centre (RSAF1), and through outside partners (City of Vancouver).

"Given the strong interest expressed by Langara faculty and staff, the Makerspace can also support the retention of faculty and staff by offering options to explore innovative technologies and peer learning." **Langara Makerspace Business Plan 2016, P.6**

Students Hired

The Makerspace has hired a number of Student Work Assistance Program (SWAP) and Work on Campus (WOC) students to assist in the general upkeep and operation of the space and to participate in faculty lead research.

| | |
|-------------------|---|
| SWAP | |
| Fine Arts | 4 |
| Business | 1 |
| Computer Science | 1 |
| General Fine Arts | 1 |
| WOC | |
| Fine Arts | 6 |
| English | 2 |
| General Education | 1 |

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Outreach

The Makerspace has participated in a number of Langara-based outreach activities aimed at raising awareness of the space, its capabilities, and the opportunities for curriculum and professional development. Outreach has also focused on recruitment through external community events, and, in collaboration with Communications and Marketing, the development of the Makerspace's visual identity.

- Academic Newsletter ongoing
- Langara Post ongoing
- CAIDV Open House ongoing
- Take your kid to work day 2018
- BC Art Teachers Conference 2018
- ETUG Newsletter 2018
- Journalism Articles ongoing
- Science Works- "Faculty Faceoff" 2019
- Applied Research Day 2019
- Beyond 49 pending

"The Langara Community is aware of and participates in makerspace activities" **Langara Makerspace Business Plan 2016, P.9**

"Establish a partnership with Communications and Marketing to develop a marketing plan and collateral" **Langara Makerspace Business Plan 2016, P.9**

"Opportunities such as Langara Day, Scholarship Café, 3D Printing Showcases, and others, to maximize exposure" **Langara Makerspace Business Plan 2016, P.9**

New Technology

In order to increase the ability to create digital content more fluidly within the Makerspace, a selection of PC and Mac laptops have been purchased that create a more mobile and dynamic work area. Additionally, to address the knowledge gap in the creation of 3D digital content, a high-resolution scanner has been purchased that augments our existing medium resolution iPad scanner.

During the 2017–2018 year, HP, in concert with the IT department, has loaned the Makerspace a series of new digital software/hardware packages. These units have been trialed by faculty and staff.

- PC and Mac Laptops
- Next Engine 3D scanner
- HP Elite Pad Loan from HP
- HP Sprout Loan from HP
- HP ZVR Backpack Loan from HP

"The Makerspace Coordinator, in consultation with the steering committee, will determine the appropriate plan for growth of the Makerspace." **Langara Makerspace Business Plan 2016, P.7**

External Partners/Funders/Patrons

The Makerspace, in conjunction with the Langara College Foundation, the Applied Research Centre, and the Social Innovating Office, has engaged with a number of external partners to examine funding opportunities for capital projects and institutional collaboration. These ongoing conversations have looked at the ways the Makerspace, and its associates technologies and communities, can be integrated into new research questions, and how external funders can augment our existing technologies to address emerging opportunities.

- CityStudio Partner
- City of Vancouver Funder

“Working in concert with relevant industry and internal partners, the Makerspace is another avenue to expand life-long learning opportunities and community partnerships.” Langara Makerspace Business Plan 2016, P.6

“A meaningful dialogue has been initiated with Continuing Studies and at least one potential external partner, with a view towards developing concrete partnerships.” Langara Makerspace Business Plan 2016, P.10

2019-2020

Summary

Over the last three years the Makerspace has built a centre with a broadly-based constituency from across Langara’s Creative Arts & Industries division and allied disciplines. We have marshalled a space that can address a wide range of technical, social, and conceptual questions—a space that is open and welcoming to cross disciplinary collaboration and partnership.

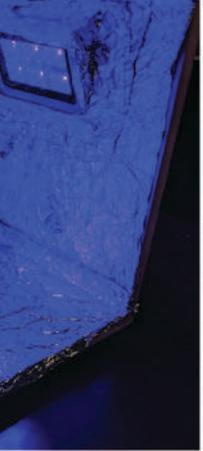
Overall there have been three ongoing areas of focus: **(1)** curricular integration of Makerspace capacity within existing and newly developed courses; **(2)** the ongoing development of technical competencies across the Langara community of staff, faculty and students; and **(3)** the fostering of innovative research/partnership/work integrated learning opportunities built upon the ethos and opportunities of the Makerspace.

In 2019, the Makerspace will continue to pursue the development of these community engagements, both within and external to, the institution.

Planning

Within the resource base built to date, over the coming year the Makerspace will continue to:

- refine and broadcast our mission statement and ethos
- broaden our outreach across the creative arts division and beyond
- offer, and expand, workshops tailored to specific departments
- develop the affinities and opportunities between Social Innovation, Applied Research, the Langara College Foundation, and the Makerspace
- pursue funding partners and associated research partnerships
- explore the possibilities within Makerspace specific credit courses



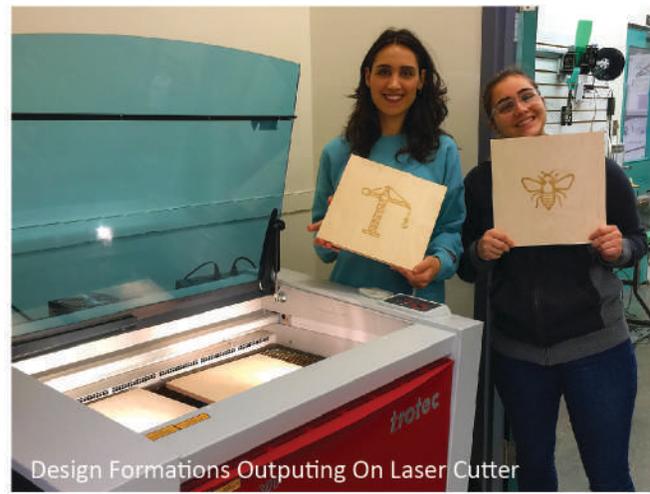
SWOP Student Operating 3D Printer



Outreach - Faculty Faceoff, Scienceworld



Prudohm Library 3D Printer Vase



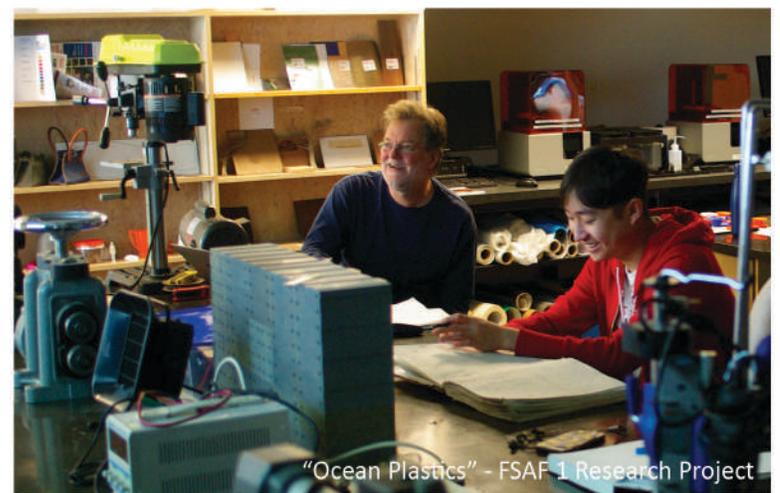
Design Formations Outputting On Laser Cutter



Lighting Design - Fine Arts



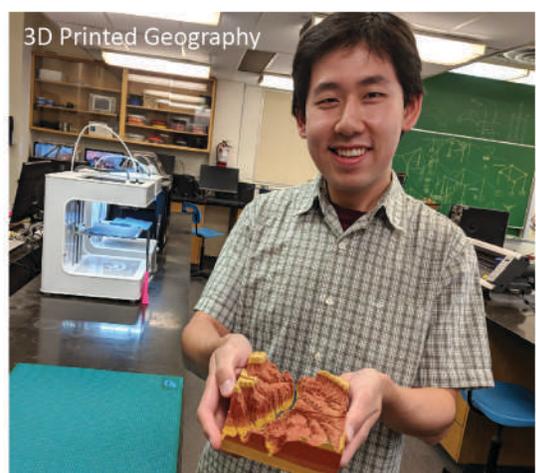
Faculty Professional Development



"Ocean Plastics" - FSAF 1 Research Project



Prudohm Library Development



3D Printed Geography



Lighting Design - Fine Arts

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Goals and Objectives

Over the coming year, the makerspace will develop:

- the design finalization and installation of the Makerspace's public identity (exterior wall branding and media screen)
- feedback mechanisms that will allow for the building of Makerspace specific datasets on usage, experience, and possible future directions
- collaborative co-projects between the Applied Research office, The Social Innovation Office, the Makerspace, and external funding bodies
- expand workshop offerings to include our new technologies, and offer greater emphasis on content creation software
- develop Makerspace specific credit course(s) aimed at the general student population