Sustainability Makerspace

Howe Library
University of Vermont

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A Roadmap for Innovation

- Mission Statement
- Institutional Alignment
  - Strategic Plans
  - Staffing
- Technology
- Academics
- Building Communities
- Libraries + Sustainability
- Q&A

Mission Statement

The mission of the Howe Library Sustainability Makerspace is to provide innovative space, skills, and tools to foster a diverse community of sustainable makers among our students, staff, faculty, and surrounding community. Our focus on education, curiosity, and sustainability will create intellectual products with lasting impact not only at UVM but on a global scale.

Institutional Alignment

UVM Strategic Plan

- Ensuring Student Success:

  - “Provide an environment that fosters diversity of all kinds, including diversity of thought.”
  - “Envision programming that leverages campus assets on a year-round basis to increase and strengthen connections to UVM while building financial resources.”

University of Vermont, 2020

UVM Strategic Plan

- Healthy Environment: “Faculty, researchers, and practitioners from throughout UVM collaborate to create new knowledge and establish best practice in areas related to sustainable farming, food systems and business solutions, and the protection of water systems.”

University of Vermont, 2020

Libraries Strategic Plan

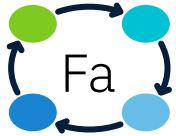
- Organizational Culture goal, Objective: “Encourage innovation and experimentation to achieve goals and objectives.”

- Education and Information Services goal, Objective: “Build coordinated programs for information-related competencies targeted to the educational objectives of academic units.”

UVM Libraries, 2016

Libraries Strategic Plan

- Digital Initiatives goal, all objectives



- Facilities goal, Objective: “Provide active, flexible user spaces that support emerging technologies, incorporate principles of user design and accommodate heavy demand.”

UVM Libraries, 2016

Staffing

- Creative Technologies Librarian
  - Hours: 9am-5pm M-F
  - Possibly situated in Center for Digital Initiatives (CDI), Library Technology Services
- Student Employees
  - Hours 7am-11pm
  - (Hours subject to reassessment)

Technology for Sustainability

Tech to use and promote in the makerspace

3D Printing

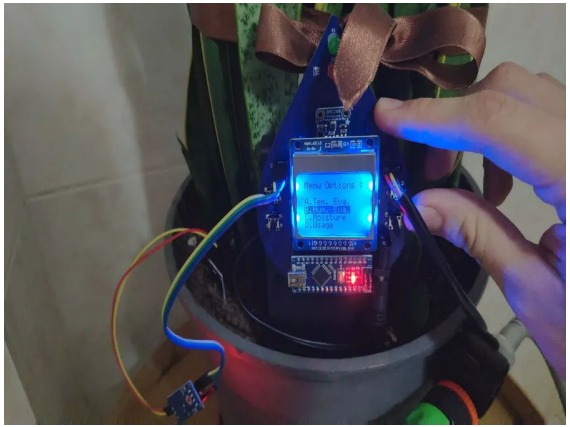
- Choose sustainable filament
  - Biodegradable
  - Compostable
  - Recycled materials
  - Filament recycling
- ReDeTec ProtoCycler
  - Grinds plastic to make filament

Sewing + Slow Fashion

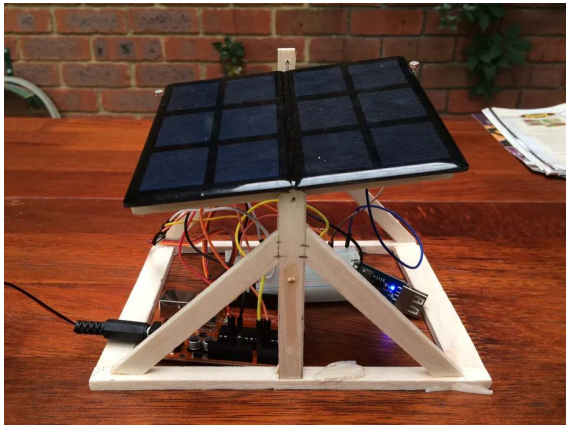
- Repair clothing to prevent waste
- Reuse fabric scraps and old garments
- Learn about fibers and environmental impact
- Combat fast fashion industry
- Make COVID masks

Arduinos + Hardware

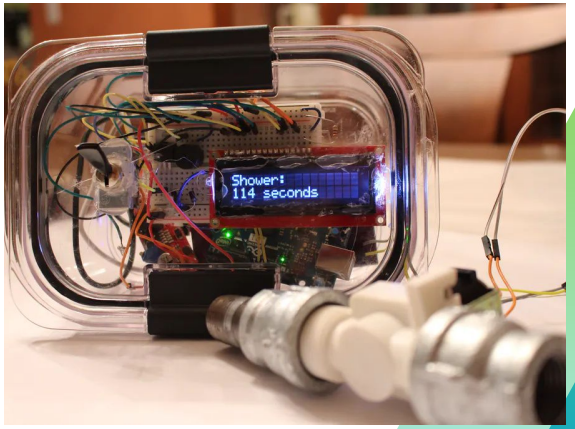
Enable and promote projects focused on sustainability goals



Plant water management system



Solar powered phone charger



Shower regulator

Virtual Reality + 360 Video

Vive Impact: VR showing the impact of deforestation in the rainforest

Harvard Sustainability: Tracking the life of a forest with 360 video

Stanford Virtual Human Interaction Lab: Showing the effect of CO2 emissions on rocky reefs through a virtual reality experience

Open Source Software (FLOSS)

- Can be freely accessed, used, changed, and shared by anyone
- Alternative to proprietary software
- Examples: GNU/Linux, Mozilla Firefox, MediaWiki (Wikipedia)

Reliable, Stable, Secure

More eyes on the source code = More bugs squashed

Low Cost

Independence from Vendors

Flexible, Innovative, Collaborative

Easy to customize and adapt, resilient to change

Knowledge vs Goods in Sustainable Practice

If you transfer capabilities rather than goods to disadvantaged communities (open source vs proprietary software), they can gain the skills to create goods themselves in the future.

... universities can help promote the Open Source model in its many different aspects and applications, thus contributing to global sustainability.

Dr. Giorgio F. Signorini, 2019
Open Source and Sustainability: The Role of University

The Sustainability Makerspace and Academics

Academic Connections and Programming

General Education

General Education and Sustainability

- EDTE 074: Science of Sustainability
  - “Students become familiar with conversations and issues surrounding sustainability, while gaining a deeper understanding of how it applies to elementary and middle level science education.”

Specific Colleges and Programs

Colleges at UVM

- Agriculture and Life Sciences
- Arts and Sciences
- Education and Social Services
- Engineering and Mathematical Sciences
- Grossman School of Business
- Nursing and Health Sciences
- **Rubenstein School of Environment and Natural Resources**
- Honors College
- Continuing Education

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College of Engineering and Mathematical Sciences (CEMS)

- Senior Experience in Engineering Design (SEED):
  - Engineering work in teams to build a prototype that solves a client's problem
- Can adjust to a smaller scale to work with other parts of the school/parts of the Burlington community
- Through makerspace, extend this project to students of all disciplines

College of Engineering and Mathematical Sciences (CEMS)

- Teaching Activity Hub (TEACH)
  - Create opportunities to connect with colleagues across disciplines
  - Develop and disseminate pedagogical resources, tailored to CEMS
  - Regularly assess teaching practices and student learning outcomes
- Sense of community is particularly important for ensuring marginalized students feel like they belong and can contribute to the field

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Building Community

Partners + Organizations

Student Group Partnerships

Vermont Students Towards Environmental Protection (VSTEP)

- aware of the crisis our environment faces and of our potential to do something about it
- Running a Thrift Shop on campus

Environment & Sustainability Interest Group

- value stewardship, community development, and creating innovative solutions to address the complex problems faced by our society.

UVM Eco-Reps Program

- cultivates environmental responsibility by training student leaders to promote sustainable practices and encourage environmentally responsible behaviors among peers.

The Pad Project

- community members sew and construct reusable pads for girls and women in Kenya who would otherwise miss school due to their periods.

Organizations to Partner With

- Center for Whole Communities
  - exists to cultivate transformative leadership that weaves together and strengthens movements for justice and the environment.
- Vermont Chapter: Community Action Works
  - has engaged with 100+ community groups facing pollution threats in their neighborhoods throughout Vermont over its 18-year history in the state
- R.E.J.O.I.C.E. Project
  - What does environmental justice look like in Vermont?
  - “We need to understand the injustices in our state, so that we can craft an environmental justice (EJ) policy that meets the needs of Vermonters.”

Goals for Programming from R.E.J.O.I.C.E Model

- Short term programming goal:
  - Increase in awareness and knowledge
    - Introduce sustainable ideas and technologies
- Medium term programming goal:
  - Build on knowledge to lead to change in behavior
    - Support student campaigns
- Long term programming goal:
  - Change in conditions
    - I.e. Green Bookmobiles (features built in makerspace)
    - Encourage patrons to not drive to library, but bring library into community

(Environmental Justice Vermont, n.d.)

“Green Team” Model Programming

- Know your library audience
- Work with community partners to co-host speakers - Community Action Works
- Focus on local initiatives the community cares about - VSTEP
- Survey the community - R.E.J.O.I.C.E

(Sittell, 2012)

Makerspace and the Library

- Why the library?
  - Specifically aligns with library's vision
  - Facilitates UN's 17 Sustainable Development Goals

EIS

HE


SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD
HE
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
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SUSTAINABLE DEVELOPMENT GOALS

“Founded on the principle of reuse, libraries have a long tradition of being environmentally friendly and have been named ‘one of the seven sustainable wonders of the world’.”

Griebel, R. (2012). Greening a Library, Greening a Community: The Calgary Public Library’s Eco-Action Plan. In Greening Libraries (pp. 113–117). Library Juice Academy.

Why Does Sustainability Innovation Matter to Howe Library?

- ALA Core value of Sustainability
  - focusing on creating sustainable libraries
  - libraries of all types can act as catalysts and inspire future generations to reach solutions that are not only sensible but essential to sustaining life on this planet
- Need to uphold environmental sustainability in makerspaces
- Sustainability matters deeply to UVM community

(Morales, 2019)

(Millard et. al, 2018, pp. 19-21)

A Sustainable Makerspace is Part of the Solution

“Ecological stewardship is one of the most pressing public priorities for communities today. As a valued center of information and community engagement, it is essential that libraries be part of the solution.”

Griebel, R. (2012). Greening a Library, Greening a Community: The Calgary Public Library’s Eco-Action Plan. In Greening Libraries (pp. 113–117). Library Juice Academy.

Thank you!

Any questions?

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