Teaching Public Interest Technology for Next Generation Changemakers:
Online Toolkits for Designing Effective Community Engaged Learning of Technology for
Social Change

UC Santa Cruz, Everett Program for Technology and Social Change

Grant Report
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1. Summary of key findings/results.

The overall of our *Teaching Public Interest Technology for Next Generation Changemakers* project was to create an online teaching toolkit for non-STEM faculty interested in designing community-engaged learning courses on public interest technology (PIT) with a focus on teaching underrepresented students in tech fields with strategic digital skills needed to work for social justice. This toolkit builds on more than 22 years of experience in the Everett Program for Technology and Social Change at UC Santa Cruz. A central feature of our program is student co-governance of all aspects of our program, and a holistic approach to education that includes engaging heads, hands and hearts in collaboration with community partners in all our work.

We were able to complete a full version of the online toolkit: (https://everettguidebook.sites.ucsc.edu/). The student team working on the project began with no experience in web design, graphic design, coding or web content creation. Working over the course of 16 months, in collaboration with Everett Program staff and Executive Fellows (recently graduated students staying on with the program in a fellowship capacity), these students played a central role in all aspects of the toolkit development, from initial conceptualization, through wire-framing and graphic design, to content creation and publication. Building on our near-to-peer teaching and leadership development structures, we hope that the final product conveys a strong spirit of youth leadership. Furthermore, we hope it models the kind of confidence building for non-STEM students in learning technology that is the core of our program, and we hope the toolkit can help support others with similar goals. Our next steps will be to further publicize the resource, and survey users on their experience in utilizing the resources on the site.

2. Background and Problem Definition

  a. *What was the project's main objective?*

The project's main objective was to create an online teaching toolkit for non-STEM faculty interested in designing community-engaged learning courses on public interest technology with a focus on teaching underrepresented students in tech fields with strategic digital skills needed to work for social justice.

b. *What was the initial problem you wanted to solve?*

There is a lack of diversity within the technology industry and technology related occupations. In particular, Black, Indigenous and People of Color (BIPOC), and women, are strongly underrepresented in these fields. As a result, students from these marginalized groups often are intimidated from learning technology-related skills and are continually excluded from spaces where these skills are taught and used. Many professors are trying to address this diversity challenge, but often lack resources and tools to support these efforts.

The Everett Program at UC Santa Cruz has built a strong program over the last 22 years that has addressed this problem internally with students at UC Santa Cruz. Our program on technology and social change typically is made up of 75% women or non-binary gender people, and 75% BIPOC students, and roughly 50% first generation college students. Our approach is rooted in working mostly with students in non-STEM majors, using a very strong peer-to-peer teaching and leadership development structure that involves hands-on work with community organizations pursuing social justice goals. This approach, we have found, helps reduce the intimidation many BIPOC students feel, helping them develop a strong growth mindset and increase their confidence in learning technology skills.

When we joined the Public Interest Technology network, we wanted to create an online toolkit sharing our overall approach, along with a range of resource materials and a toolkit, to help meet the need for more teaching resources to address the lack of diversity in the technology field.

c. *Who/what are other individuals or institutions working on similar projects?*

One of the institutions we work closely with is The Digital NEST, which works with predominantly low-income Latino youth, providing them technology and business skills, and connecting them to a broader skill-building community designed to move them into professional careers and create more prosperous communities. They do tremendous training for marginalized youth, and have curriculum materials that are useful, but don't really provide tools for others to use.

We have been excited to see the growing educational and faculty resources available on the pitcases.org website (https://pitcases.org/faculty/), but so far haven't seen many resources devoted specifically to expanding diversity in technology skills.

Currently, there are numerous service-learning toolkits developed by various US universities and some have created an effective portal such as Campus Compact (https://compact.org/). However, there are not enough substantial guiding resources specifically contextualized in the use of technology that are easily accessible and practically grounded in real classroom problems and solutions.

The United Nations Asian and Pacific Training Centre for ICT for Development has created a useful toolkit for Faculty on engaged learning in Using ICTs for Community Development, but very much for an international audience, and focused on engaged learning, rather than teaching ICTs.

In short, we are not familiar with a toolkit that is doing quite what we're trying to do.

> d. *Did you work with other teams or institutions as partners? If yes, how?*

Some of the material for our toolkit was based on a series of Impactathons we developed with funding from the National Science Foundation. Everett Impactathons are short collaborative events that use a social justice framework, collaboration with community partners and building near-to-peer learning communities to increase people's confidence and motivation to pursue technological futures that create positive social change in the world. Each impactathon had different community partners from Santa Cruz, Watsonville, or San Francisco. We put together an online learning library that includes detailed information about the community partners, the social issue of focus, and related curriculum–both about the technology tools we were teaching and the social issue the impactathon was focused on.

In developing our full toolkit, which was developed by a number of Everett program fellows, students and staff, we also worked closely with the UCSC Center for Innovations in Teaching and Learning.

> e. *How did you define diversity, equity and inclusion with respect to your work?*

The Everett Toolkit website was designed by a diverse group of Everett students, staff and faculty from UCSC from different backgrounds, experiences, and fields. The toolkit includes easily accessible and open sourced resources and guides that can be utilized by other faculty, students, and non-profit organizations looking to implement lessons, curricula or community projects that support the public good; and expands opportunities

for underrepresented communities to be at the center of the growing field of public interest tech. The Everett toolkit is not only a resource but a condensed version of how to confidently and strategically utilize technology to create a more equitable and inclusive society.

3. Development

    a. *How did you first approach the project? i. What were the intended methods and processes you wanted to use?*

There were very distinct steps along the way of developing the project. The first step involved recruiting students to be part of the toolkit development team. We wanted to make sure the voices and perspectives of students were front and center in the final product. They then spent time researching public interest technology, and different approaches to defining it, and deciding what aspect of the Everett Programs work we wanted to emphasize in developing the toolkits. We then developed a detailed work plan, with clear team member roles and responsibilities, systems of communication and feedback, and a clear timeline.

The most time intensive component of the project (at least in terms of elapsed time) was collecting and creating materials, and assessing the amount and usability of the content, that would be useful for their final website. We were able to use some materials we had used in our own teaching programs, but the vast majority of materials were created specific for this toolkit. Thus, it involved a lot of writing and editing. Part of this work also involved brainstorming key themes and categories to sort the content into.

The next step involved wireframing the website, and designing key visual and usability features of the site. This involved multiple round of ideation, soliciting feedback, revising, and soliciting feedback again. Then we were able to move to final editing of content, website development and content uploading.

    b. *What changes did you make to the project? How did you adapt to any changes in circumstances for the project?*

There were many changes we made along the way, as in any project, as we got into the details of developing and designing the toolkit. The ultimate goal never changed, but a number of design and content decisions were made along the way, from what we originally planned. In terms of the final deliverable, we changed the specific categories and themes at various points along the way. At one point, we realized we have too much content to edit/ review and then fit to template, so we reduced the amount of content and focused on the best versions of content we had to make into templates/ how to guides. We were going to collect stories from staff, alumni, and fellows/students

but we did not have enough time/capacity to set up a review process for those stories. So, we only focused on collecting stories from Everett fellows that could be edited by other fellows or themselves with some guidelines to follow. We also realized we needed to work on our use of jargon related to the Everett Program, because we wanted to make sure people outside the program could understand what we were talking about. We also had to make sure we defined certain aspects of the program like our philosophy and models, so the public could easily understand our approach to education; which further explains the importance and application of our toolkit. For the website, students originally wanted to develop it on Wix, but that needed to be changed to wordpress due to the ability for more customization and for sustainability purposes (there is more UCSC campus support for wordpress sites). We wanted to make sure we had full control of the modules, and templates we could use; so we could present information in the way we had envisioned. We also needed to make sure that this website could be easily passed onto the next cohort of fellows in the EP and have access to editing or modifying the website in the future.

Another important dynamic we had to navigate involved shifting roles and responsibilities of team members. While there was a core of student members who worked on the project throughout its life-cycle, there were other students who came and went, due to shifting class demands and schedules. This led to some shifting of roles and responsibilities, due to differing skill levels and capacities. But overall, this kind of flexibility in team work is a feature of Everett program projects, and was quite manageable.

   c. *How did you evaluate the success of the project?*

The major achievement of the project to this stage is simply creating a publicly available toolkit and resources for other people to use. We won't be able to truly evaluate the success of the project until we can see whether people are actually using the site, and conduct a more formal evaluation of their experience in using the stie. Nonetheless, we did have major milestones of success we tracked throughout the project development. All out team meetings involved workplan and content tracking, to measure our progress against our proposed timeline, including doing user-testing with pilot versions of different components of the toolkit.

   d. *What are the next steps in your project and how would you scale it, if possible?*

The most immediate next step is to engage in publicity and outreach, to help ensure as many people as possible know about this toolkit and associated resources. Beyond that, we expect to incrementally improve the site over time. This will include adding more toolkits, with more hands-on interactive exercises. We also want to add more video testimonials, including with students, community partners and alumni of the program,

about their learning journey. We also want to add more on the site about project examples, showing how learning technology in the context of applied projects helps provide motivation and confidence in the learning process.

4. Challenges

    a. What were the expected challenges you encountered? How did you solve these?

There were two major challenges we expected to encounter in developing the project. First, we knew that students would have a learning curve in utilizing the tools for building the website. This includes advanced adobe illustrator skills, and wordpress. We were confident in our students' abilities to master these skills because of our strong near-peer learning structure in the program. We were able to set up a clear study plan, with certain team members taking the lead in learning particular skills and teaching their peers. When students ran into challenges, they were also able to draw on past fellows in the program for advice and feedback.

The second major challenge we expected was in decision making processes. We knew that there would be many important decisions along the way, ranging from content, though wire-framing, to design and user experience. We were trying to pull together many years worth of experience into a single online toolkit, and knew that there would be differences of opinion on how best to reflect all this experience. To get through this, we tried to focus on the overall mission of the toolkit, and pay specific attention to our internal communication processes. Constant and direct communication was important to get through minor misunderstandings, confusion, and other issues.

    b. What were the unexpected challenges? How did you solve these?

One unexpected challenge we had involved navigating the different disciplinary training and perspectives that people working on the project had, which included sociology, environmental studies, legal studies, international development, geography and regional economic development. Since we had multiple people writing different portions of the toolkit, these different perspectives led to the use of different terms, language, and emphasis in the various parts of the toolkit. As we were trying to develop a cohesive tone and emphasis, we had to do substantial collective brainstorming on diverse and strategic ways of conveying information. We created a collective review process that tried to emphasize sticking with language and terms that could be understood by the general public. Throughout the process, we tried to emphasize keeping a focus on our end users.

    c. What were the diversity, equity, and inclusion challenges in your project? How did you respond to them?

Our overall program is rooted in BIPOC communities, with roughly 75% of our students identifying as BIPOC. We also have a strong representation of first generation college students, with roughly 50% of students being first-generation. This representation was also present in our toolkit development team. As we were reviewing language and case studies for the toolkit, we specifically had an emphasis on ensuring a focus on BIPOC communities.

One major related challenge we had involved the economic challenges so many students face, disproportionately first generation and BIPOC students. Since most of them have to balance working on this project with having to work for pay, or take care of family responsibilities, our original time-line on the project slipped a little. But this was an understandable and manageable compromise for ensuring the diversity of our development team.

  d. *What were the challenges you encountered with partners you engaged in your project? How did you or they respond to them?*

We had two major partners on the project beyond our Everett Program staff and fellows: Psychology professor and faculty director of the Student Success Equity Research Center (SSERC) Rebecca Covarrubias; and Associate Director for Learning at the Center for Innovations in Teaching and Learning Jessie Dubreuil. Sadly, our ability to effectively work with Professor Covarrubias was undermined by the University deciding to restructure and eventually end core funding for SSERC. This had nothing to do with our project, but as Professor Covarrubias was negotiating this time-consuming process, it became harder to figure out how to effectively utilize her time and expertise on our project. Fortunately, we had very substantial help from Jessie Dubreuil during the core period of our project development, who also has substantial experience in supporting underrepresented students. There were inevitable challenges in figuring out exactly at what stages to bring Dr. Dubreuil into our project development process, which are inevitable in working with consultants, but we managed this through regular project meetings, and periodic check-ins with the program director.

5. Lessons learned

  a. *How would you summarize your insights?*

Distilling 20+ years of experience into a useful tool for an external audience is challenging, but also rewarding. The experience helped us more clearly articulate our educational philosophy, and organize our teaching materials into a format that we hope is useful for other educators in the field. Yet the work is never done! We will continue to edit and modify this toolkit as we move forward, and hopefully receive feedback from others.

b. What specific advice would you offer to other members concerning this project?

Defining and redefining your program's approaches for someone who might not know about your work might take a lot of time reflecting and dissecting the parts that are most important to convey.

Progress isn't linear; capacity and productivity are always fluctuating. Expect to feel overwhelmed at first, especially if you are reviewing and re-writing years of work.

c. What specific changes at a departmental or institutional level would have made your project more effective or impactful?

We have had strong institutional support for this work.

6. Possibilities to replicate

a. How can other members replicate the project, or part of the project?

We developed a website guide where others can learn more about how to use wordpress and upload/edit content. We also have content and design templates that they can replicate for their own content. We would also be happy to partner with other organizations on leading a workshop/event or train them on using our toolkit materials. We would also be very happy to learn from other people's how-to guides and training materials, and are always looking for suggestions on how to improve our materials.

b. What considerations should other members have when approaching your challenges?

Teaching technology skills to non-STEM students is a rewarding process, but it also requires appreciation for the specific expertise non-STEM students bring to the field of PIT, and designing appropriate resources for their particular skill sets and perspectives. The "philosophy" page on our toolkit site (https://everettguidebook.sites.ucsc.edu/approaches-index/) we think is particularly valuable for educators looking to link technology skill development with social change work.

c. How can the Network support opportunities to replicate your project's success?

We would very much appreciate having the toolkit advertised through Network newsletters and on the pitcases.org website, under educational and faculty resources.

7. General Information

a. *Who can be contacted to get more information?*

Chris Benner, Faculty Director of the Everett Program

cbenner@ucsc.edu, 530-574-7585.

b. *What is the current state of the project?*

The website is live, and open to the public (https://everettguidebook.sites.ucsc.edu/). We are currently working on marketing the website, and sharing knowledge about this resource with others. We will also continue to update and improve the website, while adding new materials and toolkit items.