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Fostering Civic Engagement through Community-Centered Capstone Projects

Abstract

This account describes a state-wide project in Hawaii involving librarian and teacher teams guiding high school students through their capstone projects. The students' holistic inquiries underscored the significance of place and community in igniting curiosity and developing deep learning and creative expression. The chapter identifies key components of a community-centered approach to inquiry-based learning, namely, identifying community issues that mattered to the students, engaging community experts as mentors, and developing projects that had a broader societal focus. Along with a description of the training program for the instructional teams, the chapter focuses on the outcomes and insights gained by the students and by the teams working with them.

Introduction

Meaningful learning happens when students use information to develop critical analytical skills and practice reflective engagement. It requires the meshing of disciplinary content with a process that fosters curiosity and inquiry. Rather than teacher-led assignments, community-focused learning provides students with a sense of agency. It goes beyond content mastery to applications that assume local and global dimensions of exploration. David Perkins calls this "lifeworthy learning" that erases the silos separating traditional approaches to disciplinary study and focuses on students' personal choice, commitment, and passion (Perkins 2016, 16).

In Pathways to Excellence and Achievement in Research and Learning (PEARL), which was a grant-funded initiative, teams of teachers and librarians in Hawaii promoted inquiry that extended beyond the parameters of the school and brought their young charges into the public space. They capitalized on local and physical landscapes to introduce the interplay of disciplines and emphasized a hands-on approach to wrestling with real-world issues surrounding the students.

This chapter introduces background information on the PEARL training program to provide a necessary context for the expectations and outcomes intended for both the instructional teams and the students. The major portion of this paper provides snapshots and anecdotes of specific student and team experiences immediately following the training and continuing beyond the three years of the grant. Anonymized comments have been taken from logs, interviews, and email correspondence contributed by instructors and students.

Training through Project PEARL

The PEARL initiative received funding from the U.S. Institute of Museum and Library Services (IMLS) for three years starting in 2010. As a collaborative effort between the Hawaii Department of Education and the University of Hawaii (UH), the project's major objective was to train teams of teachers and librarians from high schools in the state to use an inquiry-based approach to assisting students in completing capstone projects. Participation required that teams applying had to include the librarian. Over the grant period, there were two cohorts for a total of twenty-four teams from schools in urban sites on the island of Oahu and various rural communities on the Big Island of Hawaii, Maui, and Molokai. A few schools required projects of all graduating seniors. Most of the secondary campuses, however, implemented capstone work as a voluntary activity for special recognition (Harada 2016, 1-3).

The PEARL design team that implemented the training consisted of a project director, a faculty specialist, and two high school librarians. The director (and author of this chapter) was a professor who coordinated the school library specialization in the UH Library and Information Science Graduate Program. A faculty specialist from the UH Information and Computer Sciences Department, who held a doctorate in curriculum studies, served as the project evaluator. In addition, the team included two school librarians from an award-winning high school who served as PEARL trainers and a graduate assistant. The IMLS grant was used to defray costs for participants' travel to summer training sites on Oahu, university course credits, and hiring of the high school librarians who served as trainers. Cost sharing involved contributory workloads from the UH for the services of the project director and faculty specialist.

Each of the two cohorts participated in a year-long professional experience that incorporated research-based pedagogical practices to assist students in planning investigations, collecting and interpreting data, and presenting results to authentic audiences. The constructivist approach to capstone work was influenced by Carol Kuhlthau's Information Search Process (Kuhlthau 2004, 41-52) and aspects of the Guided Inquiry Design (GID) model (Kuhlthau, Maniotes and Caspari 2007, 53-59) inspired by Kuhlthau's studies. The training focused on several key elements of the GID model: the initiation phase that relied on open exploration of themes and issues that students were curious about and the gathering and critical analysis of information from diverse sources. The importance of a collaborative approach to working with students was a crucial aspect of Project PEARL. The teams exchanged approaches to building a culture of reflection that empowered students' examination of their practices and performances. Community mentors were key in helping young researchers gain a range of skills and acquire in-depth knowledge.

Along with Kuhlthau's approach to inquiry-based learning, Project PEARL also introduced valuable facets of Barbara Stripling's recursive inquiry model that underscored connecting to interests, asking provocative questions, using a range of relevant resources, and constructing and expressing findings in compelling narratives and authentic products (Stripling 2010, 17-19). The training targeted strategies that promoted critical decision making and the generation of questions that explored the unknown rather than restating answers easily found (Stripling 2014, 94-97). A major goal was connecting students to community issues that challenged them to go beyond *what* to the *so what*.

To assess the effectiveness of the summer training, the PEARL design team employed questionnaires before training and after the year-long implementation. School teams also posted

monthly reports online throughout the execution phase. Post-implementation site visits and interviews were also conducted by the project evaluator. In addition, participants created electronic portfolios with examples of student projects. In assessing student work, the school teams devised rubrics and checklists based on general criteria that had been collaboratively developed in the summer training.

At the end of the funding period, the design team also produced a training guide in electronic and pdf formats to detail the project as a replicable model of professional development and made the document available to public and private schools in the state. In addition, they conducted information sessions at district meetings in Hawaii and presented reports at state and national conferences. An account of the training model developed by Project PEARL was also published in *School Library Research* (Harada 2016).

Teams: Continuing Beyond the Grant

While the official grant period began in 2010 and ended in 2013, the school teams continued their work on a voluntary and less formal basis up through 2020 when the pandemic shut down in-person attendance in the schools and capstone activities were placed on hold. During these intervening years, the PEARL director and evaluator maintained annual contact with the librarians via email, phone, and in-person visits and documented the information shared. Through 2020, eighteen of the twenty-four librarians continued to work with partners albeit the team compositions changed with retirements, transfers, and movement in teaching assignments. The PEARL director and evaluator also captured samples of student projects by receiving permission from parents to establish direct email contact with students who had been recommended by the school teams. Brief accounts of these sample projects were posted on the PEARL website and made accessible to faculty and students in the participating schools.

Teams: Insights Gained about the Inquiry Process

In a pre-training survey administered by the PEARL designers, many of the teachers admitted that their understanding of the inquiry process was restricted to helping students identify acceptable topics and use of a limited number of print and online resources. Very little time was afforded up front for the identification of a researchable and personally meaningful focus. Through their post-training logs and reports, team members shared the following insights gained about effectively building a culture of inquiry.

Attention to the initiation phase

School teams repeatedly mentioned the importance of the exploratory phase of inquiry in establishing trusting relationships, investigating issues in the community that were both local and global, and having students articulate how their personal interests and prior experiences might be connected to these issues. As one teacher noted, "The questions pursued were no longer simply *what* and *when*, but *what if, how come,* and *why did it matter.*" In this exploratory phase, students and adults initiated thoughtful conversations about how students' interests and curiosities might be merged with community issues and concerns.

Student agency in question generation

At the beginning of the training, teachers acknowledged that they often took the lead in generating questions for students to research. Several of them admitted that they felt "it saved time to give students the questions." As a result of the training, the teams realized that student engagement in the questioning phase was crucial for students to assume ownership for their work. The training introduced different protocols and strategies that teams could adopt to help students create researchable and purposeful questions. These strategies included conversation starters, interest grids and checklists, overview maps, and journal postings to actively involve students in formulating questions that stimulated their curiosity and challenged them to consider deeper investigations.

Self-reflection as integral to the learning process

Early in the training, teams expressed past disappointment with the quality of students' reflections. One teacher said, "Students write one or two sentences to produce superficial reflections." Another confessed, "We often run out of time for assessment and reflection." In the training, the design team relied heavily on modeling the reflective process and involved everyone in regular postings of individual and group reflections. As teams provided both time for and responses to students' reflection logs, they discovered that the students had substantive reflections to share. One teacher observed, "I was surprised that students were able to articulate their feelings, understand their learning targets, and provide wonderful feedback on their learning process."

Design thinking applied to collaborative instruction

Both teachers and librarians understood that inquiry learning was a nonlinear process. A fresh insight for them, however, was applying that same process to their planning. One team reported:

The students took a step back at one point because they realized their questions weren't that good. We had continued on but then we realized that we should get them to think a little more about their questions, so we also took a step back to the question generation phase. We wanted to get them thinking about what they had done and how improvements could be made. The big a-ha was giving ourselves permission to make changes without feeling like we had failed. We were involved in a spiral of trying things, observing the results with students, getting student feedback, and returning to the design table again.

Community mentors as critical partners

The teams found community mentors to be invaluable guides in students' quest for answers and their pursuit of deeper questions. While the teachers and librarians were key in identifying potential contacts for the students, the students also took the initiative to search for experts through family networks and online searches. The list of mentors included engineers, architects, scientists, professors, social workers, poets, dance teachers, film makers, graphic designers, managers of and volunteers in nonprofits, computer programmers, financial consultants, state government personnel, archivists, construction contractors, and small business owners.

Outcomes for Librarians

The team approach to working with students was critical in capitalizing on the strengths and skills of both teachers and librarians. Librarians assumed valued roles as partners, who advised

both faculty colleagues and students and provided links to specialized community resources. One teacher wrote:

Hands down, the BEST part of this project has been the collaboration with our librarian. She was always willing to check out another source or pursue another angle or clarify a difficult idea. Working with her bumped up the quality of the thesis statement tremendously. There is no doubt that taking the PEARL training as a team made the research process much more palatable. The academic and personal support that I received from my librarian created a vehicle for my own growth as a writer and as a teacher.

In the years following the PEARL training, librarians gained recognition as school leaders. Examples of roles they assumed:

- Leader of a school-wide task force for project-based learning
- Coordinator of the campus senior project initiative
- Collaborator with the school's curriculum coordinator to deliver professional development for teachers
- Coteacher for a summer program on research skills for middle school students
- Partner on a task force with community college librarians to bridge the research gaps in the transition from high school to college.

Examples of Capstone Projects

Students selected a range of issues that merged local and global community concerns with their personal interests and strengths. The following six examples capture the diverse nature of the students' pursuits.

Working with foster care youth on financial literacy

Maya integrated her concerns about the needs of underserved at-risk youth with her research in financial literacy. Recognizing that basic financial education should be available to everyone, she centered on children in foster care. She explained, "They have a high statistic of failing and dropping out of school and becoming homeless. I really wanted to give these kids a chance to succeed." To create her lessons, Maya conducted research along two critical prongs: finances and financial literacy and information about foster care and the system in place to support this.

She worked with a group of 15 youngsters ranging from middle to high school at Susannah Wesley Community Center located in a low-income neighborhood on Oahu. She taught a total of six lessons over three days with each session lasting from 90 minutes to two hours. Maya covered topics such as the basics of counting change, money management, and different types of expenses to consider. The staff at the community center were invaluable mentors. "They helped me through every step of my project and with my lessons. They were also present at every lesson I hosted." She journaled, "Financial education should NOT be a privilege; it should be provided to everyone. I also learned that foster care children are just normal kids. Working with them was fun and I learned so much."

Designing an art classroom

When Ronald's high school announced that it would be redesigning the art classroom, he decided to combine his passion for artistic pursuits with his emerging interest in architectural design by sketching a possible new classroom. Ronald saw this as an opportunity to research a range of classroom designs. As he studied different options, he realized the impact of the environment on behavior and learning. His mentors included experts from Group 70, an architectural firm in Honolulu, and from faculty at the UH School of Architecture as well as a retired UH art professor.

Ronald also surveyed students to determine what would make an appealing learning space for his peers. His ideas covered adjustable lighting, flexible creation spaces, expanded display areas, color recommendations for the room, and adequate storage areas and electrical outlets. Ronald presented his design recommendations to the faculty and many of his ideas were ultimately incorporated in the remodeled classroom. His faculty advisors noted, "Ronald's personal growth represented the kind of learning that happens when a student is set free to pursue his own quest for knowledge. His achievement exemplifies what happens when we go beyond our four walls and our students work alongside the community."

Developing personal care products

Lani had always been interested in the effects of personal care products on people's health and the environment. She decided to investigate the chemicals in such products, many of them being carcinogens and irritants that are absorbed by the skin in significant amounts. The school librarian asked a faculty member in the biological sciences department at a local community college to assist Lani in her research. Lani ultimately created a soap that she described as "an entirely natural, cruelty-free and environmentally friendly hollow ball of glycerin filled with a liquid castile soap." She elaborated, "Consumers can crack the orb over their heads to use the liquid soap as shampoo. They can also use the outer shells to wash themselves for a one-time use, which is great for showering at the beach or camping."

Lani admitted that tackling this project was "immensely challenging" and, at points, she felt like dropping her work. Coming from an extended Filipino family of seventeen adults and children, Lani was the only family member born in the U.S. and the first to identify English as her first language. Her persistence in completing the project was borne of her determination "to serve as a model for my cousins here and in the Philippines, to set the bar high, and show them that through hard work, anything is possible."

Addressing racial prejudice in World War II

Arnold discovered that Hawaii had several incarceration sites for Japanese Americans during World War II, and he actually visited the remains of a site called Honouliuli on the island of Oahu. This fueled his investigation into the racial persecution amid wartime hysteria that resulted in over 120,000 Japanese American families being imprisoned in desolate camps across the U.S. In undertaking this research, he wrote, "I thought it was very important for people to learn about every part of our history, even the darker spots we would like to forget."

He chose to showcase his research by creating a dramatic performance depicting what it was like to be a prison guard at an internment camp. With the help of his school librarian, he contacted volunteers at the Japanese Cultural Center of Hawaii. The nonprofit organization had valuable archival records of life in the camps and taped interviews with the internees. Arnold discovered that "many guards felt that what happened in the camps was wrong. Some of them wanted to speak out, however, they were seldom given the chance because they did not struggle as the prisoners did." In the state's 2019 National History Day competition, Arnold was awarded second place in overall submissions and first place in the category of solo performances.

Supporting local food businesses

Cara wanted a project with genuine community impact. She realized that more than 90 percent of Hawaii's food was imported and she was concerned about the vulnerability of the state's citizens during union strikes and natural disasters. Her extensive fieldwork included studying sustainable food production from the perspectives of both a consumer and an entrepreneur. She reviewed state government documents to determine the economic benefits of local food production and worked with personnel at the Honolulu Gourmet Foods Company to understand the pros and cons of production and marketing. As part of her research, Cara volunteered to help the company at their booth during a farmers' market held at Kapiolani Community College.

She ultimately concocted her own soup recipe made from local produce and sold it through a fresh food truck at the UH Sustainability Courtyard. She concluded, "We have a long way to go when it comes to supporting local businesses, but this situation is improving. When there's more of a demand, people's health and Hawaii's economy will get better. We must strive for self-sustainability if we are thinking about our future generations."

Creating an alternative to the use of fossil fuels

The desire for a cleaner environment drove Carol and Linda to search for an environmentally safer alternative to harmful fossil fuels. In their exploratory research, the partners identified algae biofuels as a promising source of renewable energy because it was environmentally sustainable, easy to cultivate, and growable in salt water and wastewater locales. They designed a photobioreactor system that provided algae with carbon dioxide, oxygen, and aquarium growth lights for an optimal growth environment. Their biology teachers in Advanced Placement courses served as project collaborators. For additional consultation, the school librarian also connected the students with a doctoral candidate in the UH Chemistry Department.

According to Linda, the algae analysis process was "extremely arduous." They had to decide which nutrients could be used, what concentrations would work, and what type of algae might be used. Carol elaborated:

We had thirty-nine different bottles to perform the analysis on. We had to prepare it by putting the algae in test tubes, put them through the centrifuge, then we had to put in a phosphate buffer and centrifuge it again about three times. It took us about two months in the school lab. Next, we decided to do hexane extraction to remove the lipids from the algae and get the pure biomass content. Handling the hexane was difficult since it is not safe for the human body, and it evaporates very quickly.

Carol and Linda garnered top honors at the 2017 district science fair, and they presented their research at the Regeneron International Science and Engineering Fair administered by the Society for Science in Los Angeles.

Examples of Culminating Group Projects

Instructional teams also applied the same inquiry process with groups of students completing community-focused projects in the teachers' courses. The following two examples showcase the interaction possible with the larger communities.

Crusading for a national monument

In one of the high schools in Honolulu, students in the hospitality academy found out that the remains of the largest World War II prisoner-of-war and internment site in Hawaii, Honouliuli, was located just miles from their school. Alarmed about why the U.S. government would imprison their own citizens, they conducted individual research on different aspects of the incarceration of Japanese Americans in internment camps during the war. To assist the students, the school librarian invited volunteers from the Japanese Cultural Center of Hawaii (JCCH) to introduce primary resources from the center's archival collection. When students discovered that the JCCH was petitioning for Honouliuli to be designated as a national monument, they volunteered to canvas the community for signatures and wrote supporting letters to members of Congress. In 2015, President Barack Obama signed the historic proclamation (Harada 2020, 83-84).

The students' research and petitioning efforts had a profound impact on them. Ken, one of the seniors in the academy, commented: "This project has shown me why hidden parts of history must be taught to our generation. We need to pass on these stories to let everyone remember this is what our government did! And that this can happen again." Two graduates were panelists in the 2016 Regional Youth Summit on the Japanese American incarceration that was held in Honolulu. One graduate became the first student serving on the Day of Remembrance planning committee at Creighton University in Nebraska. [Note: the Day of Remembrance is an annual observance of the Japanese American internment on or near February 19, the day in 1942 when President Franklin Roosevelt signed Executive Order 9066 that authorized the mass evacuation of Japanese American families from states on the West Coast and their imprisonment at various sites in the U.S.] (85).

Tackling environmental pollution

In a second high school situated in a suburban Oahu community, students combined their STEM scholarship with cultural knowledge to kindle community-based action. They focused their research on the Great Pacific Garbage Patch, also known as the Pacific trash vortex, a soupy collection of over a trillion pieces of debris that spans from the west coast of North America to Japan (Harada 2017, 24). Living in the only U.S. state that is surrounded by water, the issue of ocean debris is a major concern for Hawaii's citizens.

The students' larger goal was to achieve a better grasp of the human impact on the environment and the interdependent relationships found in nature. They grappled with questions that included: Why is the issue of ocean pollution critical not just for us, but for the rest of the world? How can we use indigenous knowledge from the Pacific Islanders to care for our home island? What can we do to sustain and protect our islands? As part of their information search, they viewed videos that brought home the magnitude of the plastic problem in the Pacific Ocean. Their interest was heightened when the students participated in live video exchanges with crew members from the Hawaii-based Hokulea, a double hull canoe that was circumnavigating the world's oceans from 2014 to 2017 promoting the idea of a sustainable earth (25).

Individually and in pairs, the students used an online ocean current simulator to track the path of the debris mentioned in the Hokulea crew's videos and blogs and predicted its final destination. To collect additional firsthand evidence, students formed teams of four to conduct surveys and analyze beach sand samples. They used the Ocean Conservancy's International Coastal Cleanup Data Card to document their findings. In addition, the librarian arranged for beach cleanups with Kokua Hawaii Foundation, a nonprofit organization that supports environmental education in Hawaii schools and communities (25).

For their final products, students designed and displayed environmentally friendly products from natural resources that were used by early Native Hawaiians such as belts and bracelets from coconut husk fibers, glue from breadfruit trees, and mats from pandanus plants. They also created upcycled products from plastic-based materials such as artwork from bottle caps along with wallets and tote bags from newspapers and food packaging (25-26).

Dispositions Demonstrated by Students

In their learning logs, students described specific disciplinary knowledge gained and technical and communication skills acquired. Of special interest to the instructional and PEARL design teams, were the students' reflections on growth and change in their learning dispositions. Insights from three students are excerpted below.

Building persistence

Kevin created a shape identification program for object recognition and classification that used a USB camera attached to a handheld Beaglebone Black processor, a software tool with wide uses in various industries. He wrote:

I was constantly plagued with technical issues each step of the way. This occasionally took a toll on my motivation to complete my program. Enduring the challenges taught me about perseverance. I also realized that delaying the need for instant gratification reaped a greater reward at the end.

Admitting vulnerability

Jennifer sketched designs for a 21st century classroom. She reflected:

It was okay to be vulnerable and naive. I was exposed to so many new fields and experiences. I truly felt like I was five years old again in a foreign world. At times, I was scared and uncertain, but my school advisors assured me that this was a natural part of making new discoveries. Little by little, I witnessed my personal growth.

Gaining self-empowerment

Heather developed a lesson on identity theft that could be taught at her school and also designed a smartphone app on this issue to reach a wider audience. She concluded:

The project gave me the unique opportunity to take charge of my own education. That freedom made it fun to explore. At the same time, the freedom was the most challenging part of the process. At first, I was almost paralyzed with indecision because I wanted to pick the 'right path' for my project. Once I realized that there was no 'right' way, I was able to enjoy trying different things and learning from both successes and failures. In short, the most rewarding part was the freedom to learn in a real-world setting.

Conclusion

Community-based projects allowed students to make vital personal connections with their place, their history, and their future. They became navigators on dynamic journeys where they were citizens contributing to the health and sustainability of their local communities and the world at large.

As guides and mentors, the instructional teams realized that they were teaching students to be lifelong askers of the questions, "What should we do?" and "Why should we do it?" As a learning community, both adults and students embraced a sense of public spirit that resulted in a personal investment in the well-being of their communities (Levine 2016, 31-32).

Knowledge building was seen as extending beyond the classrooms and the schools. It required the creation of an environment where "knowledge flows multi-directionally inside, outside, and beyond the classroom" (Stefl-Mabry 2006, xi). In Project PEARL, the overarching insight gained was that lifelong learning is built on making intelligent and responsible decisions about the quality of our lives. Importantly, these actions are inextricably linked to establishing communities where learning occurs for everyone.

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