

Santa Maria's Central Coast Makerspace Collaborative: A Network of Internal and External Partners

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ABSTRACT

The Central Coast Makerspace Collaborative in Santa Maria is one of 24 teams awarded a grant from the Chancellor's Office to participate in its California Community College Maker Initiative. As the fiscal agent, Allan Hancock College coordinates a network of makerspace activities in an internal community of practice among disciplines and the college library, and an external partnership with the city's public library and children's museum. A primary consideration for establishing a community-wide network was its potential to impact educational pathway planning from pre-K to college to lifelong adult learning. This paper focuses on the establishment of the Collaborative, the challenges it has encountered, and its long-term potential to realize its mission of becoming the center for STEAM education in the Santa Maria Valley.

INTRODUCTION

The Maker movement is relatively new to the California Community Colleges, beginning with competitive funding to 34 of the 114 community colleges in January 2017—then narrowed to 24 final college teams—to build a network of makerspaces at community colleges throughout the state, under the CCC Maker initiative [1]. Allan Hancock College (AHC) had already been seeking funding to establish a collaborative design lab to create problem/project-based learning experiences that challenge faculty to engage in transdisciplinary pedagogical approaches and challenge students to explore, innovate, and invent. As the only access point to public higher education in the primarily agricultural region of north Santa Barbara County, AHC has a responsibility to ensure that the educational needs of its students, who are primarily underrepresented in STEAM fields of study, are addressed. To that end, this initiative integrates Art in the STEM metadiscipline and focuses on gender and cultural equity in all aspects of the project. This paper focuses on the mission and development of a local network of makerspaces, the challenges it has encountered, and its potential for long-term sustainability. In many ways, this Collaborative mirrors the statewide network of makerspaces under which it has formed and is similarly intended to align the offering of skills needed for the innovation economy with STEAM research and practice.

BACKGROUND

The Model. Just as the emergent statewide network coordinates makerspace activities in a community of practice among the 24 community colleges, AHC's network coordinates makerspace activities both in an internal community of practice—among disciplines and the college library—and

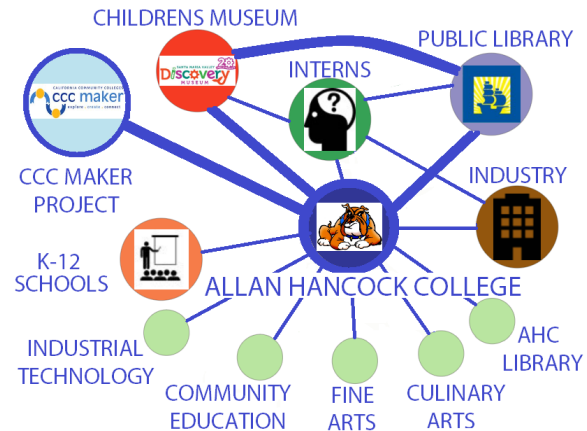


Fig 1. Central Coast Makerspace Collaborative Community of Practice.
A Kumu-style map illustrates connections among community elements.

also externally, in a partnership with the Santa Maria Public Library (SMPL) and the Santa Maria Valley Discovery Museum (SMVDM). [Fig. 1]

Across the country, the Maker movement is gaining momentum among public libraries and children's museums [2], making the SMPL and SMVDM obvious partners. The establishment, growth, and ongoing functioning of these partnerships are managed by a project director from AHC's Machining & Manufacturing program, with AHC serving as the fiscal agent. A single project coordinator, tasked with assisting with logistics, supports the project director. The partnership with SMPL and SMVDM was piloted from January-June 2017, during which time an Advisory Committee of internal and external stakeholders was established to guide the initiative. The Advisory Committee has met 6 times over the past year with 16-40 people in attendance, including representatives from industry, K-12 public schools, charter schools, faculty, students, and staffs of the partner organizations.

As awareness of the project has increased on campus, participating disciplines have expanded from the initial Machining & Manufacturing program and the college Library to include Culinary Arts, Ceramics, Electronics, the Pacific Conservatory Theatre, and the Community Education program with maker activities for English Language Learners. In addition to faculty bringing students to the CAD lab (now equipped with laser engravers, a vinyl cutter, large format inkjet printers, 3D printers and scanner, laptops and Corel-Draw software), "pop-up" makerspaces have taken place in the library, the culinary arts kitchen, the electronics lab, and the ceramics studio. These "embedded" making activities incorporated in the curriculum allow students to experiment

with tools and technologies not typically used within their disciplines.

A primary consideration for asking the SMPL and SMVDM to formally join a budding network of makerspaces was based on the idea of formalizing a continuum of activities in the community to engage people of all ages in the Maker movement. As a result, the partnership is better able to impact a greater segment of the community than the college would have been able to do on its own. This partnership of makerspaces has the potential to influence educational pathway planning from pre-K to college to lifelong adult learning for the entire community. [Fig. 2]

To accomplish its aim of broadening the range of people involved with making, the Collaborative works to incorporate a broad range of interests through the activities offered throughout the partnered makerspaces. Since its inception, the model has included art among its STEM-related activities. Not only do the tools and methods of design offer new models for creative problem-solving, but art integration also has been shown to increase student engagement and achievement, especially among students underrepresented in STEM fields of study [3]. To the same end, the partnership focuses on ethnic and gender equity among makerspace participants, which is critical in a community overwhelmingly represented by Latinos and women in the college and in the community. A review of the research on recruitment and retention of women by the Society of Women Engineers found that learner-centered pedagogy engages women and minorities who prefer learning styles other than the traditional “sage on the stage” model [4].

The mission to expand making to the broader region isn't restricted to the makerspaces at these three sites, however. Grant funds were also used to outfit a mobile trailer with maker-related kits that will be taken to K-12 schools, community centers, farmers' markets, Girl Scout and Boy Scout camps, and the Santa Barbara County Fair. The mobile makerspace can transport potter's wheels, portable kilns, propane stoves, laptop computers, 3D printers, laser engravers, t-shirt makers, and vinyl cutters to provide hands-on making opportunities to people of all ages and in all places, to reach even more people where they are.

Goals and Outcomes. The partners' stated goals for their makerspaces, individually and collectively, include:

- Highlighting the partnership approach to engage a broad range of age groups, families, college students, and single adults;

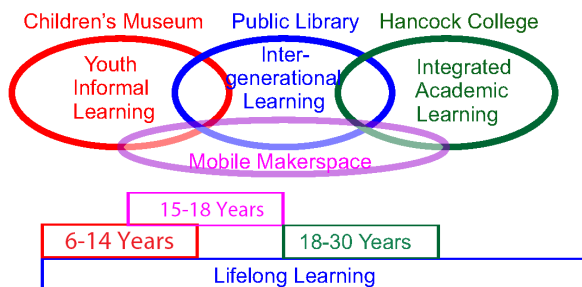


Figure 2. Lifelong Educational Pathway

- Creating a network of makerspaces with the potential to change the community.
- Creating opportunities for collaborative and life-long learning;
- Showing curricular pathways that foster identity as scientists and artists;
- Providing activities that foster self-discovery.

Interest in the project from the community has grown more quickly than staff can keep up with. Connections have been made with K-12 schools, industries, entrepreneurs, and community groups to co-host events and provide demonstrations with the mobile maker lab. This expanding community interest has attracted media attention, which has increased the demand for makerspace activities, resulting in nothing but positive responses from the community.

The high degree of community engagement can be illustrated through a sample of the activities on offer via the new Collaborative, and the recorded attendances. Approximately 700 people participated in the *Collaborative Holiday Makerspace* and in the first quarter of 2018, the SMPL's makerspace, open on Saturdays, averaged 42 attendees, and AHC's popup makerspaces averaged 43. The SMVDM's Maker Lab is open-access for tinkering and crafting during open hours, with a weekly schedule of Thursday after-school facilitated Brain Builder projects that attract 10-20 parents and children per offering [Table 1].

The SMVDM Makerspace officially opened its doors on May 5 with 48 families in attendance, when it also revealed its new Space Launch exhibit, a partnership with nearby Vandenberg Air Force Base. During AHC's annual *Friday Night Science* event on May 4, hundreds of community members visited the college makerspace to create Martian-themed buttons and shirts celebrating the launch of NASA's InSight Mars Lander, the first interplanetary launch from Vandenberg AFB [5].

IMPLEMENTATION

Making Partnerships. Although the city of Santa Maria is the largest city in Santa Barbara County, it is also a semi-rural enclave in which public, private, and community-based organizations frequently must leverage their respective resources to achieve common goals. Engaging the SMPL and SMVDM as partners was a perfect example of design thinking as AHC was at an impasse in trying to find space on campus for a stand-alone interdisciplinary makerspace. Instead of focusing on what seemed like an insurmountable barrier, the problem was solved by leveraging local resources, which added value to each organization. Participating in the college's grant application provided the library and the museum the opportunity to more quickly implement their plans for developing makerspaces within their organizations. The library and the museum had the spaces to convert but they needed guidance, equipment, and skilled facilitators, which melded perfectly with AHC's interest in providing opportunities for student internships in the community. AHC's use of existing labs for maker activities enabled the college to begin maker activities sooner than had it created its makerspace from scratch.

Cross-organizational partnerships can add depth and breadth to community impact but establishing them requires careful thought about how to build and sustain them. Several key components discussed below are necessary to move beyond merely coordinating activities to actively establishing a formal collaborative organization.

Leadership. A key component of sustaining the Collaborative is the leadership provided by the project director. The makerspace project is just one of many activities each organization is engaged in and each could easily veer off track under the challenge of getting day-to-day work done. It is essential to have a project director with a focus on the project’s strategic goals and a project coordinator to manage the logistics of hiring interns, scheduling meetings and events, and managing paperwork. Having identified points of contact when questions and issues arise keeps the partnership focused and on track. The importance of such leadership was on display when staffs were up against “can’t do” bureaucratic attitudes and the project director intervened to smooth the way. As just one example, the college’s business office often disallowed certain expenditures that the project director knew were allowable, so he quickly learned to get approval from the statewide fiscal agent before submitting the purchase request. Given the college system’s top-down organizational structure, it is not uncommon for teams throughout the statewide network to encounter roadblocks that can challenge the implementation of a project that—by design—encourages participants to “try it and see what happens” [6]. Coordination and information sharing at the state level, and leadership and dissemination at the local level, has helped teams learn from each other what works well and what does not. Similarly, each college has been assisted by the statewide network’s Technical Assistance Providers (TAP), whose knowledge and experience with complex projects has been beneficial in navigating challenges, such as managing sub-recipients with different organizational environments, which is unique to AHC in the statewide network.

Common purpose. Another essential element of successful partnerships is a commitment to a shared vision that values the contribution of each member. While each partner is functioning within its own organizational culture and practice, their commitment to a common purpose means each can reap the benefits of the others’ efforts. They are consciously choosing not to duplicate tools and activities in each space. For example, the public library has invested in sewing machines, the museum has assembled a woodworking station, and the college has industrial 3D printers. They maintain a common calendar of activities and inform participants about what is going on in the other environments. They jointly sponsor Maker days open to the community at each location. The Collaborative itself is a learning organization that shares knowledge and skills to achieve shared results, while strengthening the capacity of each organization to achieve its mission. Just as the college has access to the CCC Maker statewide TAP, the Collaborative’s evaluator provides technical assistance to the partners on matters pertaining to the project’s overall objectives.

Communication. Effective channels of communication and

feedback loops are crucial within the Collaborative and within each partner organization. Ongoing communication with partners is maintained by email, newsletter, and in-person meetings. An AHC computer science student is developing a website for the Collaborative and another student maintains a Facebook page. Yet another student who is experienced with data dashboards is maintaining the project’s Kumu map, which graphically depicts the project’s community of practice. The leadership team is now poised to establish more formal communication structures to engage in productive discussions and reach decisions about sustaining the project into the future. This includes a media campaign to engage the community and a formal structure to focus on the Collaborative’s common goals.

Challenges. Specific challenges the Collaborative has faced to date include:

- Underestimating the need for dedicated staff to manage each partner’s makerspace activities;
- Working within the constraints of each partner’s (and the statewide fiscal agent’s) budgeting and reimbursement practices;
- Dealing with the college’s slow hiring process, which resulted in a slower-than-planned ramping up of the project, truncating the first year’s implementation timeline;
- Learning to work with interns and incorporate them as staff;
- Spending allocated funds within the fiscal agent’s constraints and purchasing cut-off deadline.

While some of these challenges will persist, such as the college’s hiring practices, others have been overcome as partners learned to function in an interorganizational environment with varying levels of bureaucracy. For instance, now protracted processes are expected instead of battled, so a more realistic timeline is planned for year two.

Evaluation. As the project completes its first year of implementation, it has embarked on a formative evaluation to provide useful input and lessons learned to inform the second year of implementation. The evaluation takes a two-pronged approach that is meant to consider the effectiveness, relevance, and impact of the project (1) organizationally and operationally; and (2) individually on participants’ learning and activation to STEM.

Organization/Operation. Group interviews were conducted with the staffs of the partner organizations in which questions were asked about the participants, progress toward the project’s objectives, the partnership model, and about the perceived impact of the project. Examples of comments

Table 1 Makerspace Participation January – March 2018

Location	Activity	People
AHC	Popup Makerspaces around campus	221
SMPL	Saturday Makerspace	546
SMVDM	Thursday Brain Builders	180
Community Makerspaces	Community centers, K-12 schools, and other public events	60
	Total	1007

from these interviews are presented in Table 2.

Learning/STEM Activation. Interviews with participating faculty are ongoing. They are being asked to discuss their involvement in the makerspace movement in general and in particular its potential impact on the curriculum and student learning at AHC. In coordination with AHC's office of Institutional Research, a protocol for focus groups with student interns working at partner locations and in industry was prepared and focus groups began in April, 2018. Questions are being asked to resolve what they are learning (1) academically, (2) about themselves, and (3) about the community. The results of these interviews and focus groups will be published at a later date. The intent of this evaluation is to better understand how informal learning enhances academic skills as well as the soft skills needed to work in a multicultural society. Students' experiences will provide valuable insight in developing maker-related student learning outcomes that integrate with formal curriculum.

• **Table 2. Makerspace staff interviews, AHC (4), SMVDM (5), SMPL (3)**

Examples of Questions	Theme	Paraphrased Comments
Are activities happening according to plan?	There were delays in ramping up, but now project is essentially on track. The curriculum objective is being implemented differently than originally intended.	<i>When we first drafted the workplan, I thought, can we really do this? Now, here it is; we're doing it.</i> <i>Looking narrowly, there isn't time to get new courses through the approval process. Looking broadly, it is doable within the project period to embed Making in existing courses and link our work to those classes' learning outcome.</i>
How is the internship aspect of the project enabling your effort?	There is agreement that the project couldn't happen without the interns.	<i>They are the strongest part of the collaborative. We've seen them grow into the role.</i> <i>Their diversity brings a range of learning to the project. We offer them the opportunity to work with a population they wouldn't otherwise. Our role is to mentor them.</i> <i>It's important to have female interns to model girls in STEM.</i>
What impact is the project having on your organization?	Because of collaborative marketing of events and activities, the Maker movement is catching on in the community.	<i>It's bringing a new view to what we do and is generating excitement in the city.</i> <i>Faculty and staff are coming out of their offices to come to the Makerspace to see what we're doing.</i> <i>It's generating lots of good energy and is increasing our ability to provide learning opportunities.</i>

In year two of the grant's project period (July 2018-June 2019), evaluation methods will be established to answer such questions as:

- How do inquiry-based learning opportunities affect knowledge, attitude, and skills in informal environments?
- What are the effects of hands-on inquiry activities on science literacy?
- What is the impact on youth career motivation and accompanying family guidance when culturally responsive interns facilitate learning?
- How does the intern experience impact students' career goals?
- Has the project broadened participation by students and community members, including diverse communities?
- How does the Central Coast Makerspace Collaborative compare to the statewide network?
- Does the partnership model have legitimacy within the community? Can it be sustained?

CHALLENGES, LESSONS LEARNED, AND FUTURE DIRECTIONS

The Collaborative is now able to summarize the rich experience gained in its first year of practice. Much of the activity in the start-up process was carried out in a bottom-up fashion; the network of partners guided by individual interests acted under a "try it and see what happens" paradigm, without much thought to an overall Collaborative structure; moving toward incorporating a top-down structure is an ongoing, iterative effort. The start-up process yielded different lessons for each partner. The children's museum, never having been part of a state-funded grant, was unfamiliar with the new levels of policies and regulations within which it now had to work. Similarly, the city library had to contend with the added layer of City Council procedures as well as college and state procedures. As the local fiscal agent, the college had the added responsibility of managing sub-recipient agreements. While each partner was experimenting with what it would do and how it would do it, they were also grateful for the opportunity to learn from each other. Some learning experiences common to all are discussed below.

Overall Organization. Challenges are always present when organizations with different mission and management practices come together around a common issue or project. Differences in professional jargon and organizational styles make it difficult to understand each other, while organizations' self-interests and turf issues can make strategic management challenging. Oftentimes, employees are not incentivized for engaging in collaborative work that may impede coordinating activities [7]. Recognizing such issues might arise simply by joining together, the partners named this project The Central Coast Makerspace Collaborative. "Collaborative" as a structure is a noun and "collaborate" as a process is a verb. As a collaborative, the project is still in its infancy, functioning as a network with each partner somewhat in its own silo establishing makerspaces aligned with the movement as it is unfolding in children's museums and public libraries across the country. Within this framework,

however, the partners are collaborating on group events, branding and marketing strategies. It is as yet unclear the extent to which this network can fully establish an umbrella collaborative structure—physical or virtual—with its own mission, vision, staff, marketing plan, and resource development plan. Long-term sustainability may be dependent on it doing so.

The Advisory Committee recently began to address the overall structure and direction of the effort. While the partners celebrated new makerspaces where there were none in January 2017, the very process of creating these spaces pressured partners to focus intently on their own building rather than on the project as a whole. Now, however, the need is becoming evident to more formally coordinate the work of the Collaborative as its own entity instead of a less formal network of individual partners. Our next challenge is to formalize our local network structure, perhaps modelled after the CCC Maker statewide network structure. Under consideration is establishing a Steering Committee or Implementation Team with committed personnel who have experience in marketing & outreach, resource development, makerspace programming, and organizational development.

Advisory Committee. An array of stakeholders from within each partner's sphere was invited to an initial advisory meeting, both to engage the community early in the project and to solicit volunteers to join the Advisory Committee, which remains open to all who wish to attend. While this openness is good for generating enthusiasm, it can make timely decision-making difficult—the open-ended question, “How are we going to use this space?” can result in very long discussions among a 15-member audience. On the other hand, some meetings took advantage of the diversity in participation when attendees divided into work groups to plan certain events and activities to be held under the Collaborative. To improve this balance, the leadership team, assisted by a strategic planning consultant, will identify a smaller Steering Committee to focus on the future needs of the Collaborative.

Staffing. While the college used grant funds to compensate the project director, partners' budgets allocated minimal amounts to offset existing staff wages and assign them to the project. While this level of paid staff time was sufficient initially—before the makerspaces were in operation—it quickly became clear that planning and participating in collaborative events, on top of outfitting individual spaces and dealing with paperwork, took considerable time away from regular duties. Further impacting staff hours was the college's slow (many months) hiring process, which delayed the addition of a grant coordinator to assist the project director with logistics. Now that the makerspaces are equipped and operational, each entity is aware of the need for dedicated staff to facilitate activities in the makerspaces. The challenge is now to find appropriately skilled individuals as well as funding to sustain the positions in the future.

Initially the partners expected they would use student interns to staff their projects, but underestimated how much work would be involved in onboarding, orienting, scheduling, mentoring, and evaluating them. Thirty students were re-

cruited for paid internships in partner locations, which consisted of considerable tracking of hours and timesheets. At the time, the college lacked a cooperative work experience/internship coordinator, so coordination with the college career/job placement center didn't assume these responsibilities. A new coordinator was recently hired who will manage the logistical aspects of hiring and orienting incoming interns, relieving partners of that set of tasks.

It also became increasingly clear that long-term sustainability of the project would depend on being able to demonstrate impact through project evaluation, so an external service provider/independent contractor was hired to work with the partners on this effort. This staffing mechanism, which was accomplished in less than 30 days, is ideal for hiring time-limited subject matter experts to provide focused services to benefit the project. In year two, this method will be used to hire a consultant who will facilitate strategic planning activities across the Collaborative.

Curriculum. As depicted in Figure 2, each makerspace site and activity supports learning at various ages. The Library makerspace sees participants who don't have basic computer skills, such as how to use a mouse. They would like to more formally provide access to various technologies from basic computer use to virtual reality simulation. The Museum provides children ages 2-6 with opportunities to “tinker” in the Discovery Lab on their own, and to attend facilitated Brain Builder activities once per week. Their plan for activities in the makerspace is ultimately to link informal science learning with the school core curriculum for youth aged 6-14.

The slow college curriculum approval process presented a challenge in that it is not possible to create, approve, and schedule credit and non-credit makerspace courses within the two-year project period of the grant. Design thinking through this problem led the team to a solution: create and implement curriculum in the form of workshops focused on cohorts such as English Language Learners, Girl Scouts, and elementary school children, and to embed making activities in *existing* courses such as Ceramics, Culinary Arts and Electronics. In year two, the project director will explore the possibility of replicating Butte College's curricular model that is successfully collecting apportionment through positive attendance. Again, demonstrating learning in all partner locations and events will be difficult but essential.

Budgets. The project director guided the establishment of partner budgets, easing the challenges sub-recipients had allocating for a project that didn't yet exist in their facility. However, and not surprisingly, two necessary processes arose that proved to be cumbersome for partners, at least initially: (1) transfers among object codes, and (2) learning to conform to AHC's and the statewide fiscal agent's purchasing procedures. The latter was especially challenging for partners, as it functions on a reimbursement basis (and requires a good deal of documentation). Obtaining equipment and materials was therefore particularly challenging for the Library, which was initially constrained to a \$500 purchasing limit when using its credit card. The problem was solved with an Amazon account, which allowed expenditures of up to \$50,000. These and other adaptive measures have resulted

in all partners navigating the process with little difficulty.

Questions remain about how this process will be affected when the CCC Maker funding runs out at the end of June, 2019. In the future, will each partner be on its own to secure funding to sustain its makerspace or will the Collaborative establish an overall resource development plan? Who (dedicated volunteer Steering Committee member or a specialized service provider) will manage the acquisition of such funds? The Collaborative will need to consider various models, as securing funding collectively will look different from securing independent funders from the same pool of potential donors. Considerations such as these will be addressed in strategic planning meetings, and moving forward the Collaborative will need to be thoughtful about various models that will be most strongly supported and will have the greatest community impact.

Technical Assistance Providers. Access to the statewide network's TAPs has been invaluable. Their knowledge and experience with the community college system and with negotiating the politics of organizational relationships has been key to bringing the Central Coast Makerspace Collaborative so far in such a short time. This technical assistance will continue to be accessed as the TAP plans to meet with the college administration to help them better appreciate the potential of the Maker movement and the college's potential to play a leadership role in the community makerspace collaborative.

The Collaborative is positioned for a smoother second year of implementation, but it acknowledges how ambitious an undertaking it is. Navigating politics, sustaining staffing and continuity of leadership, and demonstrating that learning is happening are challenging enough within a single organization, let alone within multiple organizations. Whether or not the ideal Collaborative is ultimately achievable, the experience so far has lit a spark in the community and engaged many people in dynamic activities in multiple locations—a convincing sign the community will want to invest in its longevity. After another year of experience, the Collaborative will be able to provide a “how to” plan for replication in other communities. Thoughtful consideration will be given to lessons learned, roadblocks and challenges to anticipate, and what could have been done differently. Partners are already inviting feedback to this end by presenting the model in different venues, such as the *Makerspaces for Innovation and Research in Academics* conference, and at the *Santa Maria Valley Tech Summit*. Feedback from other interested parties will further inform a case study and implementation guide.

CONCLUSION

While there is a growing body of literature on the impact of the Maker movement in university settings, the impact on community college students and educators is under-documented. Three elements of the Maker movement have been identified as critical for integrating making in educational settings: (1) digital and prototyping tools; (2) community infrastructure; and (3) the “maker mindset” [8]. Community colleges have traditionally offered hands-on learning programs and have a community orientation by

definition. Now they are increasingly investing in new digital technologies, making them ideal environments for interdisciplinary curricular innovation and preparing students with the skills needed for the industries of the future.

This movement has implications for teaching the way it is traditionally done, with the teacher at the front transmitting knowledge. High impact practices are needed that stimulate and engage both students and teachers to think like scientists and artists. Although less well-defined than outcomes in literacy and numeracy, what is needed are outcomes in problem-solving, collaboration, creativity, and building effective teams. As digital and prototyping tools and resources become more pervasive, teaching and learning has the potential to go beyond “contextualized” instructional strategies. Historically, contextualized teaching has meant presenting concepts in “real life” situations, such as hands-on learning in simulated classrooms or service learning projects in the community. Situated learning experiences are effective for learning specific skills required of a job, but less so for learning higher order thinking skills, such as how to find information, adapt to change, and communicate effectively working with others to solve problems.

To achieve these learning goals, the faculty's teaching capacity must be enhanced for the new pedagogies to be effective. For engineers, artists, and manufacturers to co-teach in interdisciplinary makerspaces, they will have to learn each others' language and be encouraged to examine their differences in approach to implementing problem-based learning activities [9]. The Maker movement has the potential to blur the boundary between teaching and learning, between faculty and student. Participating faculty are experiencing this shift. Their comments in a recent interview are illustrative:

- *If I show them on the board, it doesn't click. But when they build something with their hands, it clicks. (Electronics)*
- *Problem solving is an iterative process. They have an idea, try it, fail, try again with learning that can apply to the next solution. The problem is when it comes to assessment, but we know it works. (Ceramics)*
- *My students are always wanting to do more, tackle greater problems. The increase in difficulty increases their confidence. They ask questions now and want to understand. (Noncredit ESL)*

Of equal interest is the value the Collaborative has to add to the growing body of knowledge about science learning in informal settings. The project simultaneously engages a wide range of populations in hands-on learning, while connecting them with valuable community resources. The Central Coast Makerspace Collaborative seeks to hold together efforts to integrate making in people's lives. Its objectives extend beyond how makerspaces can change the culture of our own institutions to how the Collaborative can transform the community. This greater goal makes the accomplishments and challenges worth the effort in ways that may not be true had the college created a campus-based makerspace. This next year will test the Collaborative's persistence and ability to become the center of STEAM education in the Santa Maria Valley.

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