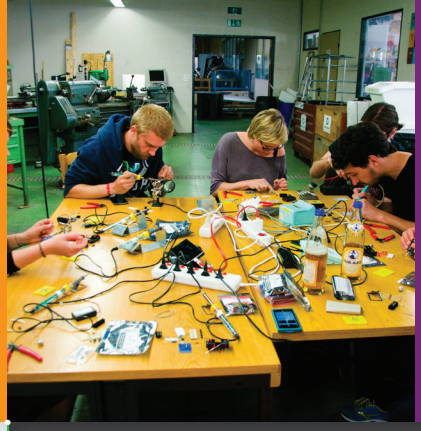

CALIFORNIA COMMUNITY COLLEGES
Doing What MATTERS™
FOR JOBS AND THE ECONOMY

maker space

PROMOTING ENGAGEMENT OF THE **CALIFORNIA COMMUNITY COLLEGES** WITH THE **MAKER SPACE MOVEMENT**

INNOVATIONMAKER3 SYMPOSIUM SERIES, JUNE 2016: SUMMARY

AUGUST 2016

CCST
CALIFORNIA COUNCIL ON SCIENCE & TECHNOLOGY

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InnovationMaker3 Symposium Series, June 2016: Summary

About CCST

CCST is a non-profit organization established in 1988 at the request of the California State Government and sponsored by the major public and private postsecondary institutions of California and affiliate federal laboratories in conjunction with leading private-sector firms. CCST's mission is to improve science and technology policy and application in California by proposing programs, conducting analyses, and recommending public policies and initiatives that will maintain California's technological leadership and a vigorous economy.

About the California Community Colleges

The California Community Colleges is the largest system of higher education in the nation composed of 72 districts and 113 colleges serving 2.1 million students per year. Under the Doing What MATTERS for Jobs and the Economy framework, the Community colleges supply workforce training, basic skills education and prepare students for transfer to four-year institutions. The Chancellor's Office provides leadership, advocacy and support under the direction of the Board of Governors of the California Community Colleges. For more information about the community colleges, please visit http://californiacommunitycolleges.cccco.edu/.

Note

Any opinions, findings, conclusions, or recommendation expressed in this publication are those of the author(s) and do not necessarily reflect the views of the organizations or agencies that provided support for the project.

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InnovationMaker3 Symposium Series, June 2016: Summary

In line with the "Doing What MATTERS for Jobs and the Economy" (DWM) framework, the California Community Colleges Chancellor's Office (CCCCO) Workforce & Economic Development Division is investing funds to grow a statewide network of makerspaces linked to California Community Colleges as a key partner in developing a workforce for the creative economy of the future. Through its InnovationMaker3 funding opportunity, the CCCCO aims to network together California community colleges committed to exploring, creating, and/or building out their connections to the Maker movement. Those colleges who answered the request for submission of letters of interest were invited to continue onto the next stage of funding consideration—participation in a symposium series presented by the CCCCO and the California Council on Science and Technology (CCST).

To support this goal, during June 2016, the CCCCO and CCST ran an InnovationMaker3 Symposium Series.[1] The symposia, held in Berkeley, Bakersfield, and San Diego, were designed to bring together interested community college Career Technical Education (CTE) and Science, Technology, Engineering, (Art), and Math (STEM/STEAM) faculty and staff with experts from their regional Maker communities. Broadly, the goals of the meetings were to:

- Begin building the envisioned community college makerspace network, and
- Inform administration and faculty of considerations required to develop a successful makerspace.

These goals were achieved by showcasing existing makerspaces in California through a series of presentations and panel discussions, as well as tours of makerspaces on the campuses of institutions hosting each meeting. In addition to input from experienced practitioners, participants had the opportunity to network over lunch and convene in groups for in-depth discussions.

The three symposia were attended by over 100 participants representing 38 colleges in total. The format and agendas were consistent throughout the state, with different speakers for each region. Variation in presenters allowed participants to have regionally specific discussions and to start the

[1] http://ccst.us/projects/CCCCO.php

network by making local connections to Maker experts as well as their regional colleagues. Presenters discussed various aspects of creating and sustaining connections to the Maker movement and then sat together on a panel to answer questions from community college staff and faculty.

In addition to presenters from the Maker community, representatives from organizations positioned to help community colleges move into the Maker movement and take advantage of the mini-grants offered by the CCCCO also gave short talks.

These included:

- The New World of Work[2] and National Association for Community College Entrepreneurship[3] (Amy Schulz)
- The Foundation for California Community Colleges[4] (Tim Aldinger)
- Base11[5] (Landon Taylor)

Northern California InnovationMaker3 Symposium: Berkeley, CA, June 13, 2016[6]

The first symposium of the series was held at the Jacobs Institute for Design Innovation[7] at the University of California, Berkeley on June 13th. Thirty-eight participants from 18 California community colleges attended. The event was kicked off by Susan Hackwood, Executive Director of CCST, and Björn Hartmann and Eric Paulos, Faculty Director and Chief Learning Officer, respectively, at the Jacobs Institute. Professors Hartmann and Paulos explained that the mission of the Jacobs Institute is to foster diverse thinking across the board in engineering curricula by bringing together groups and disciplines that are not often in conversation with each other, both through open invitations to use the space and through formal coursework.

Vice Chancellor for Workforce and Economic Development, Van Ton-Quinlivan reviewed the initiatives leading up to InnovationMaker3. The first phase of the grant series was aimed at increasing students' employability skills by advancing the curriculum. The second focused on increasing the supply of STEM instructors by restructuring the STEM teacher preparation pipeline. This phase,

This phase, InnovationMaker3, is about connecting California community colleges into the Maker movement so that students will have the skills to compete in the creative economy of the future.

[2] http://www.newworldofwork.org
[3] http://www.nacce.com
[4] LaunchPath: http://www.launchpath.com
Career Catalyst: http://foundationccc.org/What-We-Do/Workforce-Development/Career-Catalyst-Career-Pathway
[5] http://www.base11.com
[6] http://ccst.us/projects/CCCCO-north.php
[7] http://ccst.us/news/2016/0629future.php, http://jacobsinstitute.berkeley.edu

InnovationMaker3, is about connecting California community colleges into the Maker movement so that students will have the skills to compete in the creative economy of the future. Vice Chancellor Ton-Quinlivan continued to say that in her travels throughout the state as part of the Governor's Strong Workforce Task Force, she has learned that as fast as technology skills are changing, the 4 C's (Critical thinking, Creative thinking, Collaboration, and Communication) are highly desirable skills and what makes students resilient. She shared that the Massachusetts Institute of Technology had recently changed its applications process in recognition of this fact: because SAT scores tend to be less valuable predictors of student success, they are looking at Maker portfolios as part of the package.

Matt Roberts, Dean of Field Operations, Workforce and Economic Development Division, gave a brief summary of the mini-grants process and the Request for Applications[8] (RFA), saying that he was excited about the enthusiastic response to InnovationMaker3 so far. Dean Roberts emphasized that, in addition to leaning on the experts in the room, staff and faculty in attendance should focus on joining together to form the beginnings of makerspace networks at this meeting.

Brie Lindsey, Senior Program Associate at CCST, presented highlights of the report, **"Promoting Engagement of the California Community Colleges with the Maker Movement,"**[9] which was released in April 2016 by CCST for the CCCCO. She summarized the benefits a makerspace can have for students and their community; recommendations for assessment of makerspaces; and suggestions for how to proceed in forming the network of community college-linked makerspaces. Dr. Lindsey also gave a high-level checklist of startup considerations and suggestions for multiple sources of revenue that can help a makerspace become self-sustaining within the three-year timeframe required by the grants process laid out by the CCCCO's RFA.

Maker Community Speakers

In her presentation, "**Making is the 21st Century Skill (…psst! It's all about Community!)"** Jessica Parker of Maker Ed said that community skills are at the core of a successful makerspace. Therefore, it is important to consider the community of learners who will come together in each makerspace and include that culture in each space's local definition of "Making" in order to support the regional community and

…community skills are at the core of a successful makerspace. Therefore, it is important to consider the community of learners who will come together in each makerspace and include that culture in each space's local definition of "Making" in order to support the regional community and promote

[8] RFA #16-203, Fiscal Agent for INNOVATIONMAKER3 and STEM/STEAM Workforce Development, http://extranet.cccco.edu/Divisions/WorkforceandEconDev/WEDDRFAs/RFAInnovationmaker.aspx

[9] CCST, *Promoting Engagement of the California Community Colleges with the Maker* Movement. April 2016. http://ccst.us/publications/2016/2016makers.php

promote California's creative economy. Dr. Parker stressed that the separation of social, technical, and academic skills in the classroom is needless and that the process of making brings all of these together naturally. These other skills include the 21st century soft skills such as leadership and cooperation. She suggested California community colleges participating in the Maker movement are poised to lead higher education toward a new way of thinking about teaching these essential employability skills.

In studies of the Maker community culture, the following descriptors are frequently repeated: generous, having a strong sense of community, open, creative and innovative, passionate, collaborative, and welcoming. This repetition suggests how important community is to users of a makerspace. In addition to community, Dr. Parker emphasized the importance of considering equity, diversity, and identity of makers when building a makerspace.

With "**Conceiving, Designing, Building, and Integrating Fab Labs and Makerspaces into the Fabric of your School**," Danny Beesley from IdeaBuilder Labs, presented specifics involved with creating and outfitting a new community college makerspace. One piece of advice he offered was to consider initial users of the space when planning, and build it for them. "Early users who enjoy the space will be more likely to put in time and effort helping others to understand the space as well as using it," if it is tailored to their interests. In addition to physical space details and an equipment wish list, Mr. Beesley stressed the importance of considering who will be staffing the space and who will be providing advice. He has found local advisors to be indispensable for making connections to the community. Finally, thinking about the purpose of building the makerspace should help guide many of these decisions.

The final speaker before the Q&A session was Gina Lujan, founder of Hacker Lab, who, in her talk "**Hacking Innovation: How the New Era of Maker Spaces is Disrupting Government, Education, and Corporations"** gave a case study of a for-profit makerspace that generates $4-5M in revenue annually. This level of self-sustainability is achieved through rentals of incubator space, 50+ classes a month, and over 250 meetups and events (such as Hackathons) that are sponsored by local businesses. Ms. Lujan recommended Hackathons as a good way to test the level of community interest in a makerspace.

Ms. Lujan echoed the previous speakers' comments about the importance of community in the makerspace. Hacker Lab is powered and directed almost completely by volunteer efforts, and is a connection point for businesses, government entities, entrepreneurs, and community colleges. It was through these connections that the opportunity arose to work with Sierra College and establish Hacker Lab in Rocklin. One program that has taken off at this new community college based makerspace is the

Startup Hustle Bootcamp,[10] in which students learn entrepreneurial skills while connecting to local mentors.

Q&A Panel of Maker Community Speakers

Questions for these three panelists spurred discussions about:

- How to track student activities in makerspaces
- How to form communities to drive the goals of a makerspace
- Ongoing funding strategies for different models of makerspaces
- Differences between Fab Labs and makerspaces in general
- Educating businesses about the value of credentials and badges earned in makerspaces
- Expected timeline from planning to open a makerspace

Comments about the lengthy approval process for a new curriculum prompted discussion about the Strong Workforce initiatives to streamline approval processes for new curricula, as well as increase portability, where if one college has a new curriculum approved, subsequent colleges submitting a substantially similar curriculum will find the approval rate quite speedy. This portability is further motivation for members of the makerspace network to work together.

Another point that spurred longer discussion was the difficulty in both describing and predicting the jobs that would be needed. On one hand, colleges want to tell potential students what types of jobs they can get, but staff do not feel they have access to the appropriate keywords and data tools to demonstrate employability with the skills a makerspace program can help students develop. On the other hand, technology is moving at such a pace that it is difficult to predict which jobs will spring forth, even out of said makerspace, and therefore the same difficulty in selling the program to prospective students exists. Dean Roberts (and others) pointed out that the Centers of Excellence provide analyses of regionally-specific employment needs and Labor Market Information Data (LMID), and some of these data questions can be answered at the LaunchBoard: CTE Data Unlocked website.[11]

Strong Workforce initiatives [will] streamline approval processes for new curricula, as well as increase portability, where if one college has a new curriculum approved, subsequent colleges submitting a substantially similar curriculum will find the approval rate quite speedy.

Group Session

In the afternoon, participants were divided into groups intended to mix makerspace experience.

Groups were asked to discuss two questions:

- What do you want to get out of the makerspace network?

[10] http://hackerlab.org/event/startup-hustle-8-week-startup-incubator/

[11] http://doingwhatmatters.cccco.edu/LaunchBoard/CTEDataUnlocked.aspx

- What is an action item you can move on after this meeting?

Next steps included identifying a "championship team," or faculty and staff passionate enough about the project to see it through, as well as identifying board members who could provide sustained support. For network support, groups suggested that it could serve as a way to share state-approved curricula and data/metrics that show the impact of makerspaces in the community, and help identify a way to maintain connections with alumni that go through the makerspaces. They also suggested that a good idea would be to invest in professional development of faculty and staff (the "championship team") who had no experience with makerspaces, for instance to tour existing makerspaces in the region and get inspiration from different makerspace models.

Attendees then toured the Jacobs Institute for Design Innovation following the symposium.

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Southern California InnovationMaker3 Symposium: San Diego, CA, June 16, 2016

The second symposium of the series was held at the EnVision[12] Lab in the Jacobs School of Engineering at the University of California, San Diego on June 16. Forty-one participants from 22 California community colleges attended. The meeting followed the same format as the previous one, with similar introductions by CCST and CCCCO representatives. This time, Nate Delson, Professor of Engineering at UC San Diego (UCSD) joined the welcome team and gave an overview of the new EnVision Maker Studio on the UCSD campus.

Maker Community Speakers

Four speakers joined participants in San Diego: Nate Delson (UCSD), Parker Thomas (partner, Mirus Labs), Salomón Dávila (CTE Dean, Pasadena City College), and Xavier Leonard (cofounder of Fab Lab, San Diego).

In "**Maker Spaces: The Good, the Bad, and the Ugly**," Nate Delson said student empowerment is the key to a successful makerspace experience. Unfortunately, that element is very difficult to implement, at least in part because it requires a very large shift in traditional teacher roles. One way to ensure students do well (while still allowing them to learn through failing) is to start with warm-up projects that invite students of all skill-levels to participate. In addition to getting students to take ownership of the space and the projects they complete in the EnVision Lab, it is important to get faculty to buy into the importance of the space as well. This can be accomplished by involving their

[12] http://ccst.us/news/2016/0629future.php, http://jacobsschool.ucsd.edu/envision/

areas of interest, hiring faculty whose teaching capacity is aligned with makerspace culture, allowing faculty to help define the direction of the space, and take criticism as a natural part of an innovative process. As with speakers at the Northern California symposium, Professor Delson emphasized the importance of staffing the space with technical directors who are not faculty, but who are responsible solely for running the makerspace. This can be helped by allowing students to take on assistantships.

… student empowerment is the key to a successful makerspace experience. Unfortunately, that element is very difficult to implement, at least in part because it requires a very large shift in traditional teacher roles.

Another important aspect of makerspaces is culture. According to Professor Delson, a makerspace should have a deliberately formed culture of inclusion *and* of excellence. Leaving this culture to develop without forethought could mean the difference between a thriving Maker community and a dusty, unused room.

The dusty, unused room (or 3D printer) is exactly what Parker Thomas wants everyone to avoid. In "**Making the Experience**," he advocated for beginning makerspace design with a simple question: why are we doing this? Taking the loftiest goals of the makerspace, pulling from these the skills and knowledge users should demonstrate, and identifying the desired culture in the makerspace to form the foundation for planning the space. From here, identifying how the space can fit into the existing curriculum and projects to support learning in that context should guide equipment choices.

Salomón Dávila, Dean of Economic and Workforce Development, has thought through many of these aspects, as he helped build and equip the **"Fab Lab at Pasadena City College"** (PCC) in 2005 (and has continued developing it since). He shared how he grew up in Texas and followed a "pre-engineering" path in high school, which allowed him to earn many industry-certified credentials by graduation. After graduating from the Massachusetts Institute of Technology with an engineering degree and traveling the world *making* for prominent companies, someone said to him, "Oh, I see, it's because you went to MIT." To this, he responded, "No, I learned all of this in high school!"

…it is important to get faculty to buy into the importance of the space as well. This can be accomplished by involving their areas of interest, hiring faculty whose teaching capacity is aligned with makerspace culture, allowing faculty to help define the direction of the space, and take criticism as a natural part of an innovative process.

Whereas his math, English, and science classes were contextualized with his electronics, machine shop, and welding classes in high school, Dean Dávila found that in many places, MIT included, these tracks were quite separate and students who had plenty of academic training were often unprepared to make the leap to actually building

their designs. This observation ignited his passion for the Maker movement and its potential for transforming students who are not academically prepared or challenged in traditional classes to become critical thinkers and creative problem solvers.

…students who had plenty of academic training were often unprepared to make the leap to actually building their designs.

Dean Dávila took participants through a virtual tour of the PCC Fab Lab, and then showed a video of students who came in at the lowest academic level ("Basic Skills" students) in a work-learning program through the Fab Lab. These students worked with a local business to develop 3D maps of the campus for blind students, using what they learned in design courses taught through the PCC Fab Lab, and fabricating prototypes of the 3D maps using the equipment in the Fab Lab.[13] He closed by sharing that all of these students ended up transferring to California Polytechnic in Pomona.

Xavier Leonard closed the Maker presentation session with, "**The Fab Four: Four Practices that Enrich and Sustain the Fab Lab**." According to Mr. Leonard, involving people in the lab begins with hands-on education. Using "Just in Time" engineering principles—where rather than learning all facets of a piece of equipment before using it, one learns only what is needed in order to complete the project at hand—is a dependable way to ensure members quickly acquire a broad set of competencies and remain engaged.

Who is involved is extremely important for the success of the space. The core community, or the initial and lasting users, are an important component of defining the culture of the makerspace, and can have lasting effects. Not only are they the people who will put the effort in to make sure the space runs well, they also recruit others to join in. Finally, the core community has a strong hand in determining the "community at large." Through initial connections made between the community and core members, a network is created which defines a makerspace's capacity to become and remain self-sustaining.

Using "Just in Time" engineering principles—where rather than learning all facets of a piece of equipment before using it, one learns only what is needed in order to complete the project at hand—is a dependable way to ensure members quickly acquire a broad set of competencies and remain engaged.

Q&A Panel of Maker Community Speakers

A large part of the Southern California symposium discussion and questions were devoted to topics related to educational pedagogy and makerspace culture than the

[13] https://www.youtube.com/watch?v=d-G1K3S5UlY&feature=youtu.be

discussion in Northern California, which tended to be more focused on workforce and makerspace model choices.

Questions posed to this panel ranged from how to give students who must take remedial skills courses more confidence to adopt the maker mindset to providing teachers with professional development to aid their own shift in teaching mentality, away from traditional "chapters in books" outlooks to "let them fail" and "facilitating, not lecturing" ways of teaching. Professor Delson pointed out that it can be "really scary" to embark on this new way of teaching, where the professor doesn't stand up and tell students what to do and how to do it, but instead lets them explore and potentially fail. Discussions also touched on faculty buy-in, such as inviting faculty to use the space, communicating that there is no "my space," but it is an open space; how to staff the makerspace so that faculty don't feel pressured to keep up with technology on top of their teaching commitments; and ways to raise funds to purchase consumable materials (e.g., lab fees and community/extension courses).

…how to give students who must take remedial skills courses more confidence to adopt the maker mindset to providing teachers with professional development to aid their own shift in teaching mentality, away from traditional "chapters in books" outlooks to "let them fail" and "facilitating, not lecturing" ways of teaching.

At the end of the discussion, the point was raised that libraries seem to be very interested in having makerspaces. All panelists agreed that libraries are a good place to approach partnerships. Libraries tend to have lots of space available, and traditionally want to be on the edge of technology. Mr. Leonard also brought up the point that libraries have traditionally existed as places that provide access to people who can't afford some services, and have in the past acted as community technology bridges. In this way, they would also make a great access point for makers looking for a place to make.

Group Session

Groups were formed in the same way as at the Northern California meeting, and were asked to have ready answers to the same questions:

- What do you want to get out of the makerspace network?
- What is an action item you can move on after this meeting?

Participants wanted to facilitate communication with one another so that they could share ideas, best practices, overcome challenges, and communicate platforms and other ways to assist each other. In addition, some said they would like for the network to develop a regionally based promotion or outreach program for the makerspace initiative

so that everyone is using the same message. Still others are excited to use the network as a catalyst for changing the way students are taught and learn.

Action items that groups noted included:

- Get a contact list from the symposium so communication can start right away
- Start thinking about how to break down silos at respective colleges (e.g., workforce development offices do not communicate with career center or student services, so efforts are duplicated)
- Find champions to promote the message and develop the programs
- Look at the amount of funding available to colleges to help define scope
- Visit other makerspaces to learn about different models
- Meet with faculty to define expectations
- Find funding sources; start setting up advisory committee, to include not only faculty but also other stakeholders
- Look into having a Makers Faire on campus to bring in businesses and other partners
- Look beyond those who are already designated as authorities on Making---the network should celebrate a diversity of ideas and backgrounds

Participants wanted to facilitate communication with one another so that they could share ideas, best practices, overcome challenges, and communicate platforms and other ways to assist each other.

Other questions for consideration included:

- What is a definition we can use for a "quality makerspace?" How does integration occur?
- How do we build an interdisciplinary community and overcome cultural differences that exist on our campus?
- What projects would be good for strengthening or testing the makerspace method?
- How do we find the students and partners?

Following the symposium, participants toured both the EnVision Maker Studio and the Design Studio.

Central California InnovationMaker3 Symposium: Bakersfield, CA, June 23, 2016

The final symposium of the series was held at California State University, Bakersfield on June 23. Sixteen participants from ten California community colleges attended. The meeting followed the same format as the previous two, with similar introductions by CCST and CCCCO representatives. Andrea Medina, Director of Grants and Outreach and

supervisor of Fab Lab, CSU Bakersfield welcomed participants and spoke briefly about their makerspace.

Maker Community Speakers

Three speakers shared their makerspace experiences with participants in Bakersfield: Andrea Medina (CSUB), Scott Kramer (Fresno Ideaworks), and Salomón Dávila (CTE Dean, Pasadena City College—an encore performance for him).

Andrea Medina talked about CSUB's entry into the Maker Faire circuit, and how important it is to educate the public; not everyone knows what Making is, and many would not consider themselves Makers, despite the fact that they are. Ms. Medina has found it important to ensure Fab Lab mentors look like the people who will be using the space, to ensure that there is a comfortable, inclusive and welcoming environment. For instance, when she runs a program for the Girl Scouts later this summer, she will have many female mentors running the space.

Ms. Medina pointed out that much of what is known about makerspace culture and impact comes from anecdotal evidence. She is currently performing quantitative research on the effects of makerspaces on student attitudes toward STEM subjects.

Scott Kramer talked about the rise of Fresno Ideaworks, a makerspace imagined in the back room of a Mexican restaurant by 16 interested parties, 8 of whom are still involved in the daily activities of the space. One co-founder had a specific interest in whether "employers would come to recognize alternatively-learned skills as having equal value with traditional education credentials." From just an idea to a fully-functioning, broad-model makerspace, Fresno Ideaworks[14] is now the local brand of making. Mr. Kramer maintains that their array of events (Ceramic Sundays, Sawdust Sundays, Metal Mondays, Tech Tuesdays, Wooly Wednesdays, 3D Thursdays, and Super Sumo-Bot Saturdays) is what has allowed the space to have such an impact, and has attracted a membership with a dizzying array of backgrounds.

It is this diversity of skillsets and perspectives that he values most about the membership. "One message I really want to impress upon you is this: open your doors to the public." According to Mr. Kramer, making these connections has been central to the growth of the space and the relationship with the community.

Salomón Dávila shared the same personal background as at the Southern California meeting, but added that one of the difficulties of getting the curriculum off the ground is the fact that this way of teaching puts the instructor in a completely different role. Dean Dávila explained, "As opposed to here, where you are listening passively while I am talking, in a makerspace it can be… chaotic. It can be fun; it can be an emotional rollercoaster… The instructor there is really just guiding individuals through some

[14] http://fresnoideaworks.org/wp/

turbulent emotions…" But in the end, he said, all of that is for a good cause: to make students more creative, critical thinkers. And it can be empowering not only for the students, but also for the instructors, who can learn to let go of the book and the chapter.

Q&A Panel of Maker Community Speakers

Many of the questions posed at this meeting also related to education and how to integrate with makerspaces, and many people were interested to hear specifics of Dean Dávila's design course series. Other discussion topics revolved around how to handle safety considerations, and whether a goal is to train people so they can have unsupervised use of tools. One participant suggested that in cases where equipment is donated by industry, these are often accompanied by an agreement to provide continued maintenance and training. Participants in this discussion also wanted to know about funding sources and how to become self-sustaining. Finally, people asked about approaching integration between disciplines, especially given how challenging it can be to bring together STEM/STEAM and CTE (according to participants). All panelists answered that more interaction leads to more collaboration and integration.

But in the end, he said, all of that is for a good cause: to make students more creative, critical thinkers. And it can be empowering not only for the students, but also for the instructors, who can learn to let go of the book and the chapter.

Group Session

The group of participants in the Central California symposium was smaller than at previous meetings, so they broke into two groups, with one college (that had a makerspace) split between the groups to spread out the experience.

They were posed the same two questions:

- What do you want to get out of the makerspace network?
- What is an action item you can move on after this meeting?

From the network, they wanted to get professional development for all employees, equipment training, equipment-specific curriculum ideas, a website where they could share these curriculum ideas, and a place to talk about where to order equipment. They also suggested that novice groups (those without any experience with makerspaces) might form a subgroup and be mentored by network members who have more experience.

Action steps that came out of these discussions included:

- More networking
- Going back to campus and talking to the community to get people excited

- Guidance about what an “internship” should be - one idea was that students who became entrepreneurs through the makerspace should “count” as successes, regardless of whether they had actually completed an internship - another suggestion was that internships could be within the makerspaces themselves, perhaps with students actually designing and marketing the makerspaces for the college

Following the symposium participants toured the Fab Lab, CSU Bakersfield.

Conclusion

The 38 colleges represented at an InnovationMaker3 Symposium Series event are eligible to move to the next phase in the mini grant application process. The conversation at each event was enthusiastic and initiated the connection of probable network members. The meetings appeared to spark important discussions ahead of planning, creating, implementing, or growing makerspaces at multiple campuses.

Agenda and Attendees:

UC Berkeley

Northern California InnovationMaker3 Symposium

UC Berkeley | Jacobs Institute for Design Innovation | Monday, June 13, 2016

- Agenda -

9:30 am	**Registration and Coffee**
10:00 am	**Welcome** *Susan Hackwood, PhD, California Council on Science and Technology* *Bjoern Hartmann, PhD* *Jacobs Institute for Design Innovation, UC Berkeley*
10:05 am	**Introductory Remarks** *Van Ton-Quinlivan & Matthew Roberts, EdD* *California Community Colleges Chancellor's Office*
10:20 am	**Promoting Engagement of the California Community Colleges with the MakerSpace Movement** *Brie Lindsey, PhD, California Council on Science and Technology*
10:40 am	**Break**
10:50 am	**MakerSpace/EDU** *Jessica Parker, PhD, MakerEd*
11:00 am	**Conceiving, Designing, Building and Integrating FabLabs and Makerspaces into the fabric of your school** *Daniel Beesley, Idea Builder Labs, Laney FabLab*
11:10 am	**MakerSpace in the Community** *Gina Lujan, Hacker Lab*
11:20 am	**Panel: MakerSpace Issues and Opportunities** *Jessica Parker, Daniel Beesley, Gina Lujan*
12:05 pm	**Resources Quick-Talks** *Amy Schulz, National Association for Community College Entrepreneurship* and *New World of Work* *Tim Aldinger, LaunchPath* *Landon Taylor, Base11*
12:30 pm	**Networking Lunch**
1:30 pm	**Small Group Sessions** *Join suggested groups for discussions* *Designate group reporter*
2:30 pm	**Discussion Highlights and Wrap-up**
3:00 pm	**Break** *Form groups for optional tours of Jacobs Institute for Design Innovation (20-person limit per group)*
3:15 pm	**Optional Tour of Jacobs Institute for Design Innovation begins**

1.	Maura Devlin-Clancy	City College of San Francisco
2.	Gay Krause	Center for Innovation Foothill College
3.	Carol Pepper-Kittredge	Sierra College
4.	Michael Halbern	Sierra College
5.	Ilona McGriff	City College of San Francisco
6.	Jennie Mollica	City College of San Francisco
7.	Zack Dowell	Folsom Lake College
8.	Hilary Goodkind	College of San Mateo
9.	Gary Hartley	Folsom Lake College
10.	Liane Freeman Krause	Center for Innovation, Foothill College
11.	Gabriel Meehan	Sacramento City College
12.	Cheryl Taylor	Butte-Glenn Community College District
13.	John Boyd Trolinger	Butte-Glenn Community College District
14.	Celine Pinet	Hartnell College
15.	Heidi Diamond	Cañada College
16.	Mark Martin	CA Community Colleges
17.	Vanson Nguyen	College of Alameda
18.	Danny Beesley	Idea Builder Labs/ Laney College
19.	Cynthia Correia	Laney College
20.	Raquel Arata	Los Rios CCD
21.	Torence Powell	Cosumnes River College
22.	Payson McNett	Cabrillo College
23.	Drew Burgess	College of Alameda
24.	Irfan Ortak	College of Alameda
25.	Trish Nelson	College of Alameda
26.	Karen Shores	CA Dept. of Education
27.	Jerome Countee	American River College
28.	Randy Schuster	American River College
29.	Hyla Lacefield	Cañada College
30.	Beth Regardz	Cabrillo College
31.	Hassell Painter	Hartnell College
32.	Simon Pennington	Foothill College
33.	Cory Fisk	Cosumnes River College
34.	Ed Mojica	Cosumnes River College
35.	Carrie Mulcaire	Cabrillo College
36.	Myron Jordan	College of Alameda
37.	Susan Hackwood	CCST
38.	Brie Lindsey	CCST
39.	Donna King	CCST
40.	Matt Roberts	CCCCO
41.	Van Ton-Quinlivan	CCCCO
42.	James Krehl	Laney
43.	Roy Brixen	San Mateo
44.	Danny Kirk	MakerEd

45. Tim Aldinger	Launch Path
46. Bjorn Hartmann	Jacobs Institute for Design Innovation
47. Amy Schulz	National Association for CC Entrepreneurship
48. Landon Taylor	Base 11
49. Jessica Parker	MakerEd
50. Gina Lujan	Hacker Lab

UC San Diego

Southern California InnovationMaker3 Symposium

UC San Diego | EnVision Maker Studio | Thursday, June 16, 2016

- Agenda -

9:30 am	**Registration and Coffee**
10:00 am	**Welcome** *Susan Hackwood, PhD, California Council on Science and Technology* *Nate Delson, PhD, UC San Diego*
10:15 am	**Introductory Remarks** *Matthew Roberts, EdD,* *California Community Colleges Chancellor's Office*
10:35 am	**Promoting Engagement of the California Community Colleges with the MakerSpace Movement** *Brie Lindsey, PhD, California Council on Science and Technology*
10:45 am	**Break**
10:50 am	**MakerSpaces: The Good, the Bad, and the Ugly** *Nate Delson, PhD, UC San Diego*
11:00 am	**MakerSpace Education and Planning** *Parker Thomas, Mirus Labs*
11:10 am	**MakerSpace Concretes** *Salomón Dávila, Pasadena City College*
11:20 am	**The Fab Four: Four Practices that Enrich and Sustain a Fab Lab** *Xavier Leonard, Fab Lab San Diego co-founder*
11:30 pm	**Q&A Panel: MakerSpace Issues and Opportunities** *Nate Delson, Parker Thomas, Salomón Dávila, Xavier Leonard*
12:15 pm	**Resources Quick-Talks** *Tim Aldinger, New World of Work & LaunchPath* *Landon Taylor, Base11*
12:40 pm	**Networking Lunch**
1:40 pm	**Small Group Sessions** *Join suggested groups for discussions* *Designate group reporter*
2:40 pm	**Highlights and Wrap-up**
3:00 pm	**Break** *Form groups for optional tours of EnVision Maker Studio*
3:15 pm	**Optional Tour of EnVision Maker Studio begins**

1. Robert Mabry — Allan Hancock College
2. Dejah Swingle — Coast Community College District
3. Holly Chavez — Allan Hancock College
4. Ashley Gaines — San Bernardino Community College District

5. Roger Powell	San Bernardino Valley College
6. Steven Fuchs	Orange Coast College
7. Mark pracher	West Los Angeles College
8. Lisa Soccio	College of the Desert
9. Paul Clarke	MiraCosta College
10. Salomon Davila	Pasadena City College
11. Karen Riley	S.C.R.A.P. Gallery
12. Arineh Arzoumanian	Pasadena City College
13. Martin Arreola	The Pepper House
14. Chris Hill	MiraCosta College
15. Wilma Owens	Palomar College
16. Mark Bealo	Palomar College
17. Ed Smith	CACT-San Diego City College
18. Trudy Gerald	San Diego City College
19. Israel Dominguez	Saddleback College
20. Adrienne Price	Mt. San Antonio College
21. Lisa Knuppel	Orange Coast College
22. Rola Halawanji	LACCD
23. Jennifer Martinez	LACCD
24. David Arnold	Los Angeles Community College District
25. Greg Krentzman	LACCD
26. Mark Lowentrout	Mt. San Antonio College
27. Clark Lin	UCSD
28. MARGARET YAO	Crafton Hills College
29. Dr. Lorena Patton	Norco College
30. Scott Callihan	Los Angeles Harbor College
31. Alfred Konuwa	Woodland Community College
32. Salomon Davila	Pasadena City College
33. Dorsie Brooks	Golden West College
34. Alfred Konuwa	Woodland Community College
35. Jesse Dewald	UC San Diego
36. Olenka Cullinan	Base 11
37. Leslie Blanchard	Grossmont
38. Priscilla Lopez	Los Angeles Harbor
39. Nate Delson	UC San Diego
40. Parker Thomas	Mirus Labs
41. Xavier Leonard	State of California
42. Tim Aldinger	Launch Path
43. Landon Taylor	Base 11
44. Susan Hackwood	California Council on Science and Technology
45. Brie Lindsey	California Council on Science and Technology
46. Donna King	California Council on Science and Technology
47. Matt Roberts	California Community Colleges

CSU Bakersfield

Central California InnovationMaker3 Symposium

CSU Bakersfield | Fab Lab CSU Bakersfield | Thursday, June 23, 2016

- Agenda -

9:30 am	**Registration and Coffee**
10:00 am	**Welcome** *Susan Hackwood, PhD, California Council on Science and Technology* *Andrea Medina, CSU Bakersfield*
10:10 am	**Introductory Remarks** *Matthew Roberts, EdD,* *California Community Colleges Chancellor's Office*
10:25 am	**Promoting Engagement of the California Community Colleges with the MakerSpace Movement** *Brie Lindsey, PhD, California Council on Science and Technology*
10:40 am	**Resources Quick-Talks** *Tim Aldinger, New World of Work & LaunchPath*
10:55 am	**Break**
11:00 am	**MakerSpaces and EDU** *Andrea Medina, CSU Bakersfield*
11:10 am	**MakerSpaces in the Community** *Scott Kramer, Fresno Ideaworks*
11:20 am	**MakerSpace Case Study: Pasadena City College** *Salomón Dávila, Pasadena City College*
11:30 pm	**Q&A Panel: MakerSpace Issues and Opportunities** *Andrea Medina, Scott Kramer, Salomón Dávila*
12:15 pm	**Networking Lunch**
1:15 pm	**Small Group Sessions** *Join suggested groups for discussions* *Designate group reporter*
2:30 pm	**Highlights and Wrap-up**
3:00 pm	**Break** *Form groups for optional tours of Fab Lab, CSU Bakersfield*
3:00 pm	**Optional Tour of Fab Lab, CSU Bakersfield begins**

1.	Alyssa Haerle	KIT Community
2.	Julius Sokenu	Moorpark College
3.	Theresa Zuzevich	College of the Canyons
4.	Ron McFarland	College of the Canyons
5.	Tom Vessella	College of the Canyons
6.	Mary Rees	Moorpark College
7.	MaryAnn Doherty	Riverside Community College

8. Arthur Turnier	Moreno Valley College
9. Dan Turner	Yuba College
10. Salomon Davila	Pasadena City College
11. Jenny Hughes	Mt. San Jacinto College
12. Armen Toorian	Glendale City College
13. Anne Marie Allen	Chaffee College
14. Obosa Osagie-Amayo	KIT Community
15. Susan Hackwood	California Council on Science and Technology
16. Brie Lindsey	California Council on Science and Technology
17. Donna King	California Council on Science and Technology
18. Matt Roberts	California Community Colleges
19. Tim Aldinger	Launch Path
20. Scott Kramer	Fresno Ideaworks
21. Andrea Medina	Fab Lab, CSUB