



Pali STEAM Shop

A makerspace project at
Palisades Charter High School



Donna Mandosa

M.Ed. Technology in Education,
Harvard Graduate School of Ed

Co-founder of Los Angeles Young
Makers

Hub Director at GameDesk;
Curriculum Development at
PlayMaker School at New Roads

CUE Board Member

Technology Director at Palisades
Charter High School

MakerFaire exuberant since 2008

<https://todaysmeet.com/STEAMShop>



- Founded in 1961
- Affiliated charter school in 1993
- Independent charter in 2003
- 2900 students
- 117 zip codes
- 25 languages
- 35% free and reduced lunch
- 96% attend college



Technology @PCHS

- ◊ 1:1 iPad Program launched in August 2013
- ◊ 7 computer labs: programming, photography, web design, film, general use
- ◊ Mixed platform environment: WindowsXP – iOS8
- ◊ Long Term Strategic Planning Committee



STEAM Shop Team

- ‘Organize or make, but not both’ – Gui Cavalcanti
- Distribute, delegate and diversify!
- Coalition of math, science, VAPA, special education, ESL, and technical education faculty and classified staff



Challenges to Innovation

- ◊ Student Interest
- ◊ Physical Space
- ◊ Community Buy-In
- ◊ Funding
- ◊ Curriculum

**POSITIVE
PIVOTING!**



Three Year Implementation

- Year One: Hello Maker Movement!
- Year Two: Focus on Sustainability
- Year Three: Into the Classrooms



Year One: Hello Maker Movement!

- Researching key organizations, concepts and tools
- Recognizing faculty and classes that are already STEAMy
- Reigniting “old school” STEAM aka shop class



Year One: Research

- Stanford Fab Lab – PCHS Executive Director Dr. Pam Magee and members of PCHS board visited Stanford in early spring of 2013
- MakerFaire – PCHS staff attend in May 2013
- Making a Makerspace – PCHS staff attend a workshop run by Artisan's Asylum, one of the largest makerspaces in the country
- Conferences: CITEA, CUE, 3D Printing Expo, ASCD, LA StartUp Weekend

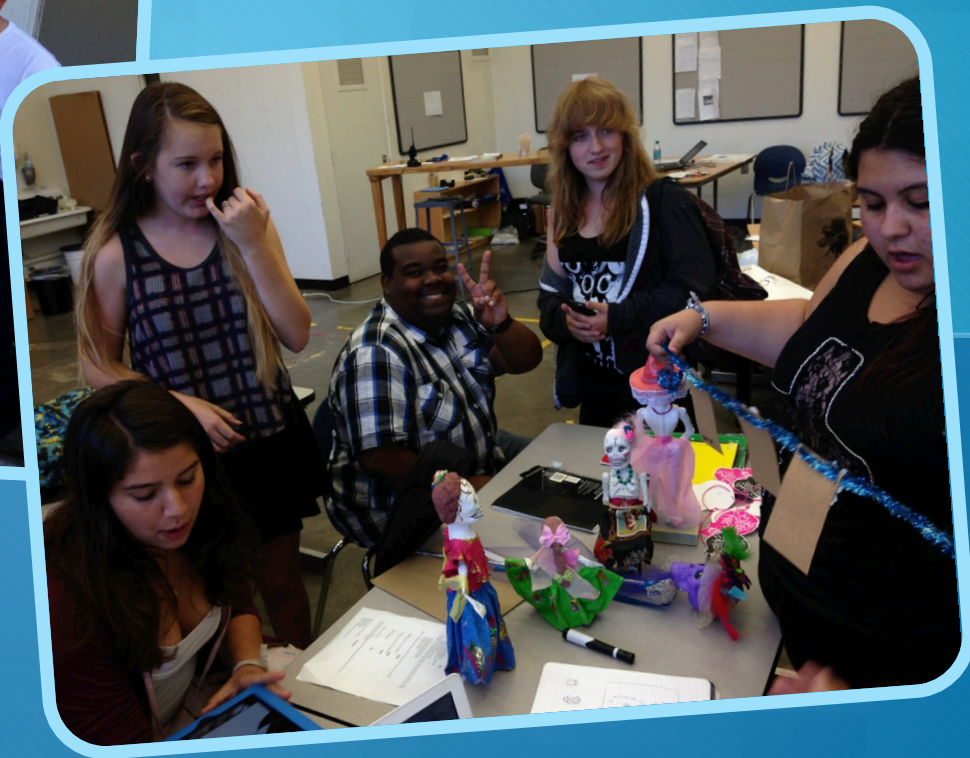


Year One: Recognize

- MESA – math, engineering, science achievement course
- Knitting - elective that incorporates hyperbolic patterns
- Urban Ecology – 9th grade science class built cardboard cities
- Life Skills – sewing and cooking
- Computer Science – AP programming
- VAPA and LSU collaboration – Day of the Dead



MESA Class

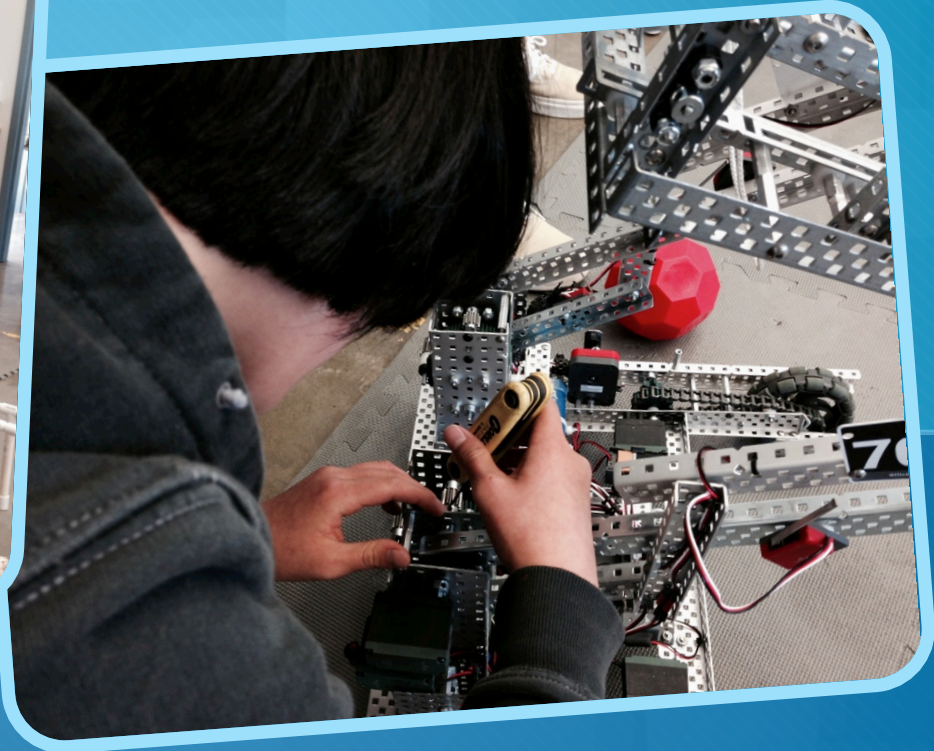
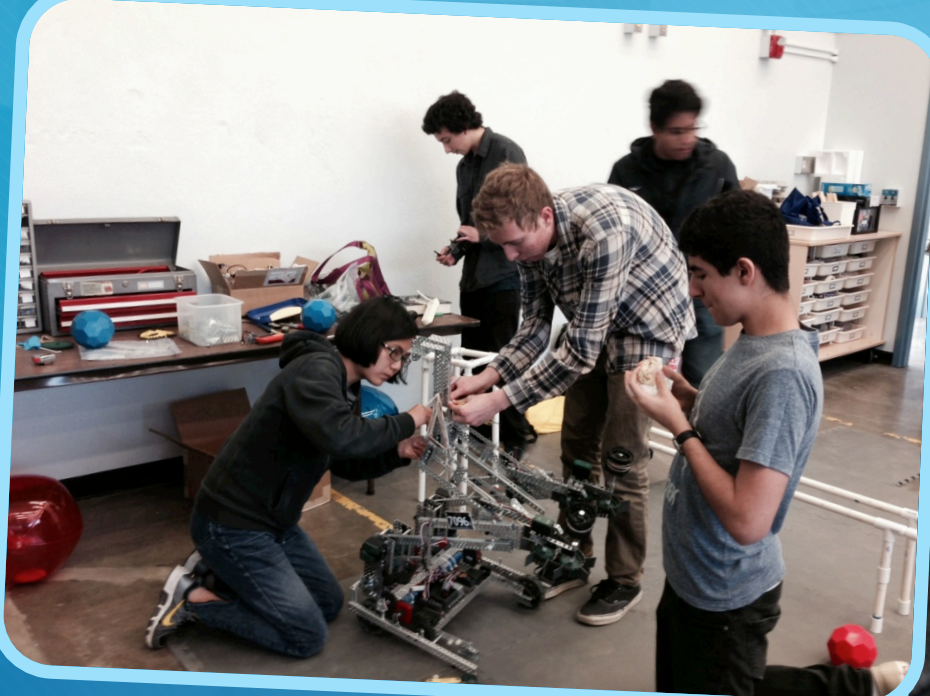


Day of the Dead

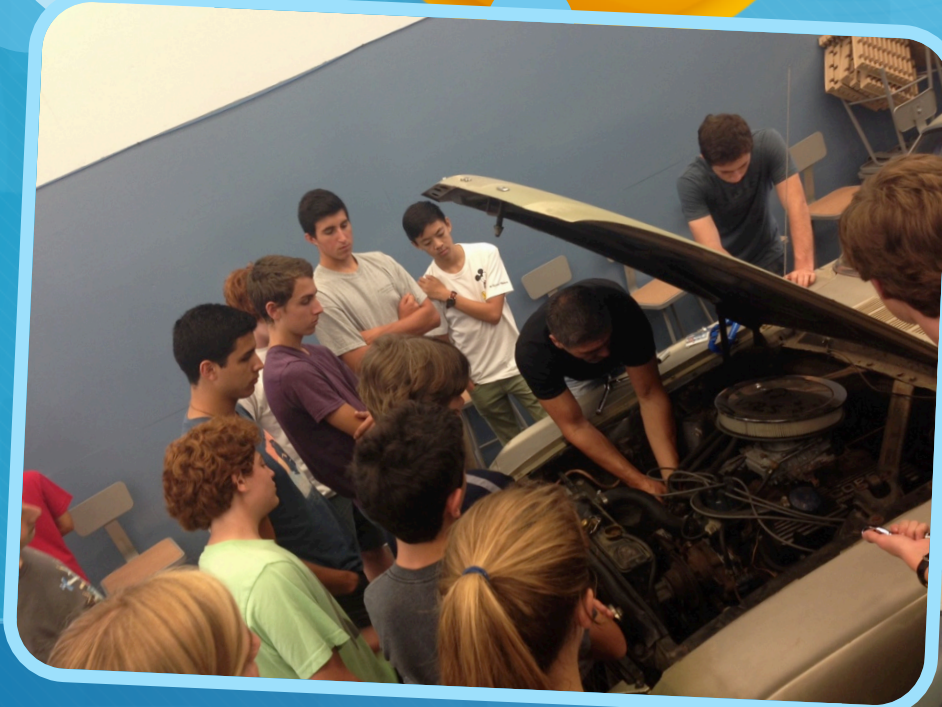


Year One: Reignite

- Robotics – student created and led club had been meeting off campus until the STEAM shop gave them space
- Auto Shop – original classroom cleaned out (after 20 years of storage) so that historically popular class could be brought back as afterschool club



Robotics Club



Auto Shop



Year Two: Sustainability

- ◊ Funding to launch
- ◊ Funding to last
- ◊ Curriculum to make meaning



Year Two: Funding

- ◊ LA StartUp Weekend @ UCLA Anderson School of Management – hackathon event to rapidly develop apps and biz ideas
- ◊ Grant application team
- ◊ PCHS Education Foundation
- ◊ Long Term Strategic Planning



MIT-Lemelson Inventeam

Student group submitted a grant proposal to develop a DIY, low cost, land-mine sniffing robot.

They'll find out if they got the grant in early October!



Year Two: Curriculum

- ◊ STEAM projects, lessons, activities must be meaningfully aligned to state standards and UC a-g requirements
- ◊ Time as a luxury:
 - ◊ Classroom time
 - ◊ Student schedules
 - ◊ Graduation and college requirements



Year Two: UCCI

- Planning to host a UC Curriculum Integration Institute in early January 2015
- UCCI emphasis is CTE
- Institute goal is to create five, new courses that merge CTE subjects into core academic subjects



Year Three: Into the Classrooms

- ◊ Implement UCCI courses PCHS develops
- ◊ Creation of a STEAM pod (9th grade small learning community)
- ◊ STEAM Shop as a drop-in, shared resource space; a tool library, workshop, studio



Pali STEAM Shop and Auto Shop



Resources

- MakerFaire <http://makerfaire.com>
- Maker Education Initiative: <http://makered.org>
- K-12 Fab Labs
<https://tltl.stanford.edu/project/fablabschool>
- MIT Media Lab <http://www.media.mit.edu>
- UCCI <http://ucci.ucop.edu>



Donna Mandosa
dmandosa@palihigh.org