maker space:

Promoting Engagement of the California Community Colleges with the Maker Space Movement

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BERKELEY, CA

STEM/STEAM SKILLS FOR THE CREATIVE ECONOMY

INNOVATIONMAKER3 SYMPOSIUM

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what is making?

Creating.

+

Communal

Interdisciplinary

STEM/STEAM-focused

Diverse

Process

Open-ended, inquiry-based

Fun and playful

Empowering

maker space

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what can students learn?

Making & makerspaces are complementary

"4 C's" of 21st Century Skills:
Creative Thinking ❖ Critical Thinking ❖ Collaboration ❖ Communication

Soft Skills:
Problem solving ❖ oral & written communication ❖ teamwork/collaboration ❖ leadership ❖ creativity/ innovation ❖ self-direction ❖ professionalism/work ethic

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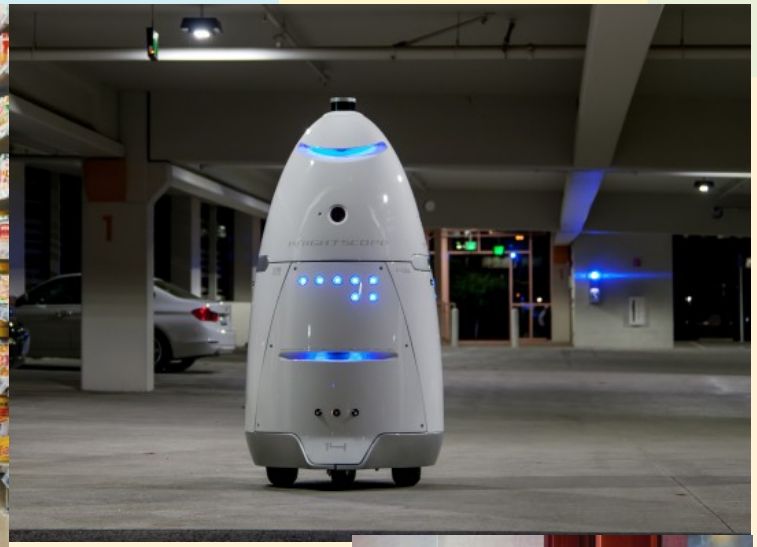
the robots are coming



21st Century Skills are increasingly important

Via *MIT Technology Review:* Image courtesy of Simbe Robotics; image courtesy of Savioke; image courtesy of Knightscope; image courtesy of Starship Technologies

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making and WBL

Work-based learning programs:

- Improve completion rates
- Develop workplace skills (teamwork, creative problem solving)
- Increase student interest in potential career paths

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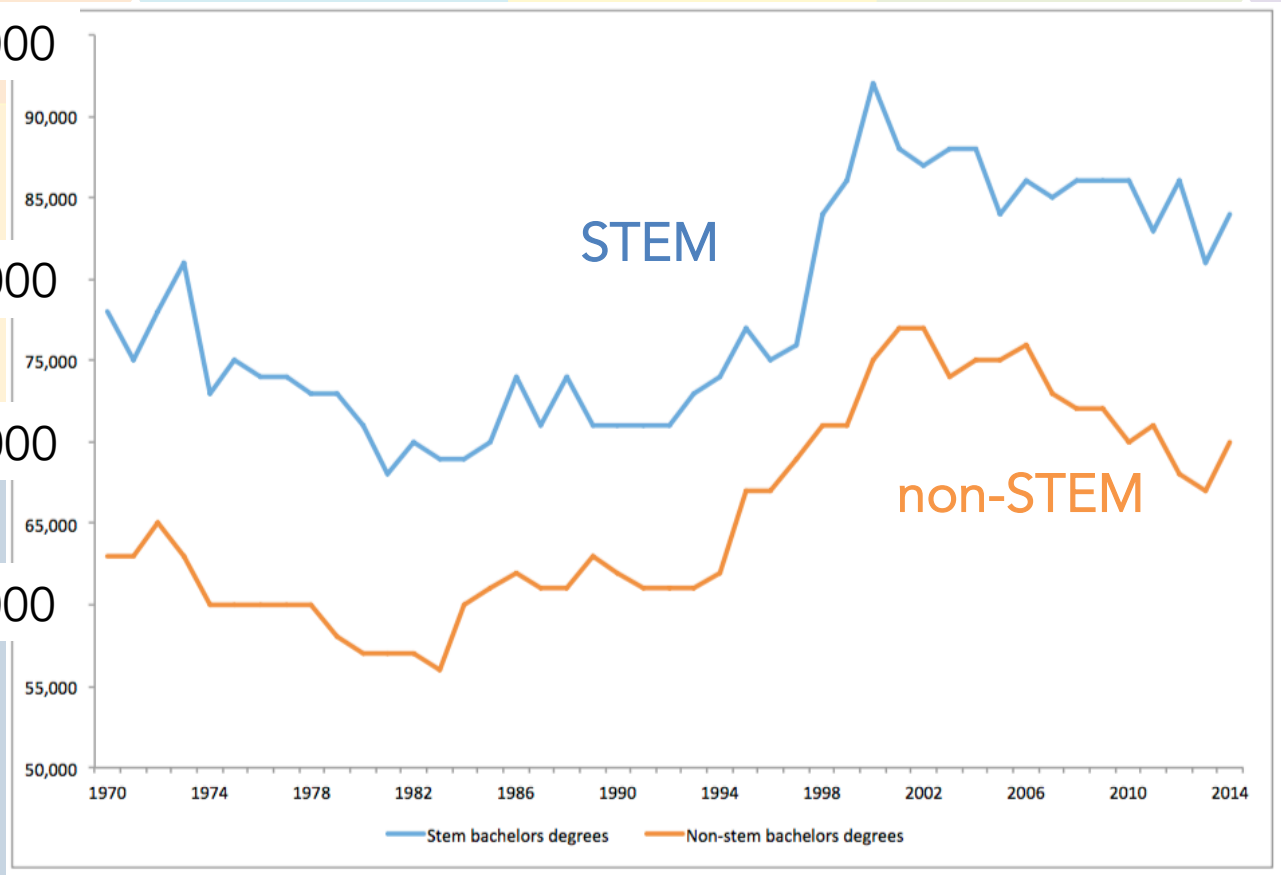
STEM: life-long impacts



Mean earnings for STEM vs. non-STEM bachelor's degree holders from 1970 to 2014.

(Source: University Ventures Letters, Volume VI, #5. March 4, 2016.)

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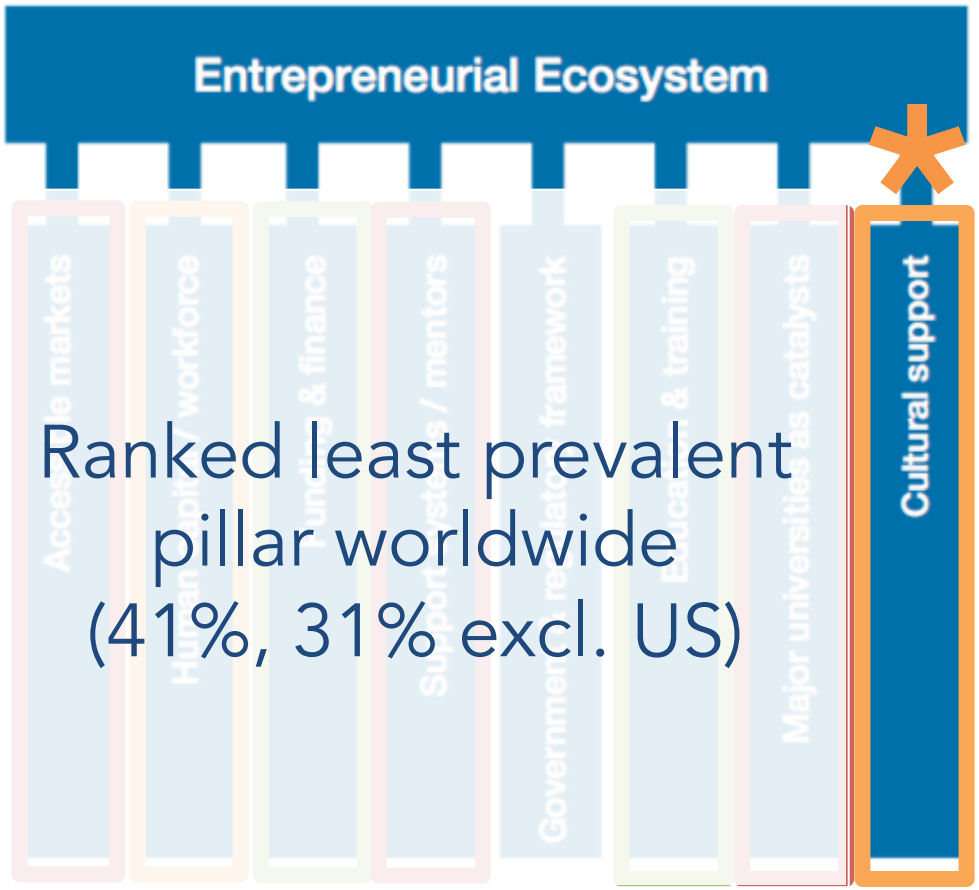
making strong ecosystems



Ranked least prevalent pillar worldwide
(41%, 31% excl. US)

Technical support
(tolerance of risk and failure, celebration of innovation, positive image of entrepreneurship)

Etsy; Ebay

=

MAKER MINDSET

2013 World Economic Forum survey of 1,000 entrepreneurs: 8 pillars of entrepreneurial ecosystem

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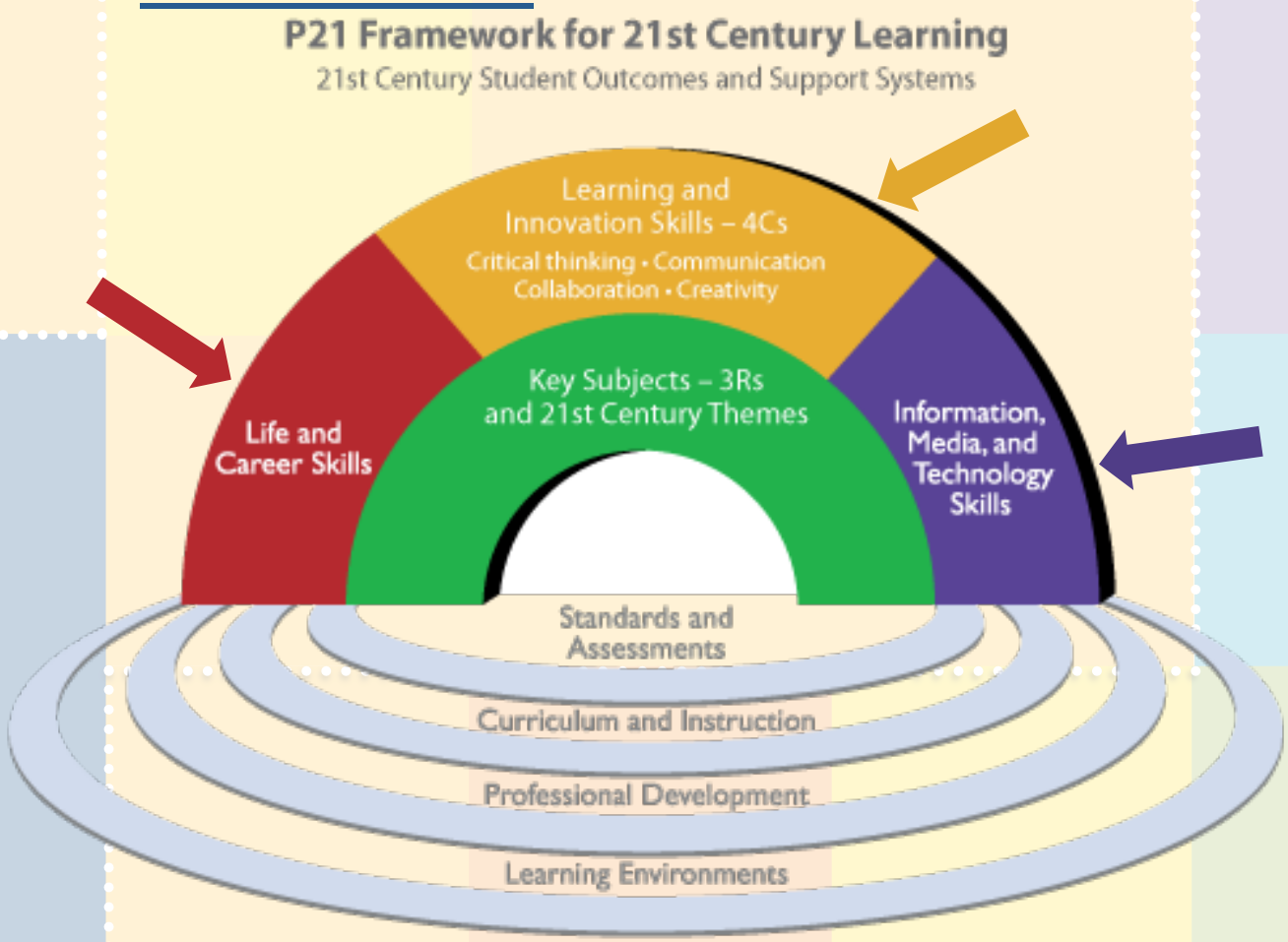
making assessments

Academic: P21 Framework



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making assessments

Entrepreneurial:

Entrepreneurial Ecosystem Vibrancy—Connectivity

(Strangler and Bell-Masterson, 2015)

Indicator	Measure	Possible Sources
 CONNECTIVITY	Program connectivity	Under development
	Spinoff rate	Possibly: CrunchBase; LinkedIn
	Dealmaker networks	Private databases, including Capital IQ

Connections matter, and a dense network of connections, among a small number of programs, is arguably more important than a sparse network among a larger number.[16]

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making considerations

- 10+ Makerspaces statewide
- Lead institution
- Geographically dispersed
- Connect CCs to regional economies
- Offer links to jobs, WBL

making considerations

- Strong support from CTE, STEM/STEAM
- Staff commitment
- Mutually beneficial interactions between MSs and traditional course offerings
- Integrate with traditional instruction framework
- Complement existing course offerings

how might the network look?

- Lead – responsible for growth and success
- Steering committee – draw from outside
  - CEOs from MSs outside network
  - Execs from businesses & foundations
  - Reps of key Maker orgs (Maker Media, Fab Lab)
- Regularly meet/share knowledge
  - Webinars (every other month, rotating topics)
  - Annual in-person meeting @/near Maker Faire

how might the network look?

- Sharing of staff resources
  - Pool buying power for equip/software
  - Pool staff time for grant applications/requests for donations

- Shared methodology for identifying how each MS will meet network's goals

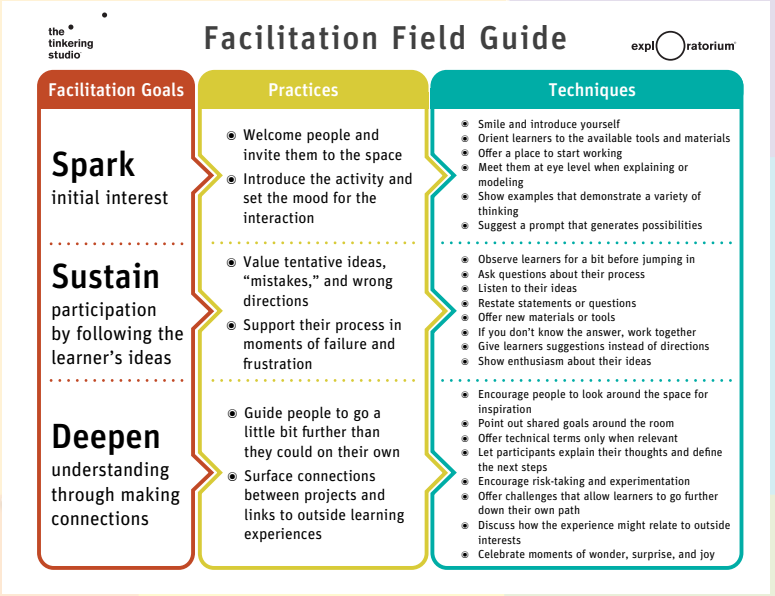
start measuring success

Questionnaire-style:

- # of measurable products
- # workshops, badges, etc. completed
- # CC students, faculty, etc. served
- User demographics
- Is MS receiving contributions from local bus & gov't?
- Do regional employers recognize and value badges, etc. earned at MS?

Behavioral Metrics:

Learning Dimensions Rubric framework (Exploratorium, 2015)



http://tinkering.exploratorium.edu/learning-and-facilitation-frameworks

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start making

Startup checklist:

- ☐ Goals
- ☐ Staff
- ☐ Activities
- ☐ Tools/Equipment
- ☐ Space/Infrastructure
- ☐ Community and Campus Support
- ☐ Website and Database
- ☐ Funding Strategy

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thank you!

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