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**CURRICULUM WORKING GROUP WEBINAR**  
**March 7, 2007**  
**NOTES**

Attendees:

Vicki Conner, Strategic Vitality  
Jamie Foster, CSA  
LeeAnne Haworth, CSA (recorder)  
Fran Kennedy, California Labor and Workforce Development Agency  
Carey Kopay, UC Davis  
Diane Siri, ARCHES  
Dennis Galligani, ARCHES  
Janet Tarjan, Bakersfield College  
Jane Zinner, Cuneo/Zinner Group  
Deb Hirsh, CSEWI  
David Gonzales, El Camino College

Goal Statement:

Curriculum

*Create, fund, train and integrate relevant and inspiring STEM curriculum, activities, materials and courses into both formal and informal education, beginning at pre-school.*

Questions/clarifications/input regarding goal statement?

Vicki Conner (VC): Even though other bookend is implied, the STEMCAP Steering Committee suggested that the other end of the spectrum be identified in the goal statement, in other words, what is the other end (university or life learning, etc.)

Jane Zinner (JZ): Preschool through what? University or employment?

VC: Is the past university—or employment—beyond the scope of the STEMCAP project? I don't think we want to migrate to the "incumbent worker" part of it because this piece is being covered by other WIRED/California Innovation Corridor projects, but the STEMCAP extends at least through university.

Fran Kennedy (FK): I understand the comment, but would like to see life long learning could be included in the goal statement even though other projects are handling the "worker" piece of it. *FK would like to see the spectrum include life long learning approach.*

VC: The incumbent worker was not included in original concept for the STEMCAP, so this may require some additional thinking in order to address the incumbent worker. Will have to rethink some of the December 9<sup>th</sup> recommendations. The STEMCAP project was designed to stop at "employment"; do we want to stretch this out a little bit?

Diane Siri (DS): What was discussed about this at the December 9<sup>th</sup> working group? Who is the community college student? Are we supporting life long or post graduate training?

David Gonzales (David): El Camino College services a population that extends beyond the typical mid 20 age student. The community college student is widely varied in age, position in life, etc.

Cary Kopay (CK): *Recommends emphasizing that training extends beyond the university.*

VC: I was concerned that the original project goal doesn't include life long learning, but maybe it does. The project goal references "development"—i.e., retirees going into teaching or individuals entering the workforce at different stages of life. Maybe it [life long learning] is already implied, we just haven't called it out yet.

*Recommendation: Modify the STEMCAP project goal to clearly include life long learning.*

JZ: Requested objections of including life long learning into the goal statement? [No comments received; therefore, using the silence is concurrence rule, it is assumed that everyone agrees to include life long learning in the project goal.]

CK: The word "train" seems out of place where it stands now in the goal statement. "Train" doesn't fit here; it should be moved to "both formal, informal and *training*, beginning at pre-school..."

DS: The intent was to capture professional development or other types of *training* that would be generic to all segments. There may be programs where the idea is to take innovative curriculums and "train" providers to use the curriculums.

CK: Suggests putting "train" after "courses"; it doesn't make sense where it is right now.

JZ: *Recommendation: Wordsmith the goal statement later to include the word "train", but not in its current location.*

CK: Goals need to be connected/not overlap

### **Strategy Elements: INSPIRE**

Each Student

Each Teacher

Each Community Through Collaboratives

VC: What does the word "communities" refer to?

DS: [response] Grassroots and relevant to various geographical areas of the state, including both rural and urban communities; inspire people in their locality. It includes geographical and stakeholder communities.

With Curriculum that is Global and Innovative

VC: What is meant by a "global" curriculum?

DS: The industry representatives in the Dec. 9<sup>th</sup> working group wanted to make sure that it was known at an early stage that there are global opportunities in STEM careers—a chance to inspire students with global opportunities. The intention to bring out worldwide opportunities in training in this STEM area.

Include Activities that are Relevant

Show Possibility of Future Opportunities

Show Relevant Role Models “Doing It”

Increase Expectations and Access

Show Early Success and Eliminate Exclusivity

Connect Innovation and Application

**Strategy Elements: ENGAGE**

Students, Educators, Parents, Community and Industry as Partners

Teachers and Counselors Through STEM Professional Development

Align Public and Private Resources

Cultural Relevancy and Role Models

Non-Traditional Teachers (industry, retirees, volunteers)

Regional Collaboratives

Novice to Expert

Geographic Diversity – Urban to Rural

Time and Resources Outside of Traditional School Day and Year

New Measures of Success

Dennis: What does this mean?

DS: Engaging, innovative part of it, how to look at non-tradition measures and rewards encouraging students/people to stick with it. [For example], most people in STEM [tracks] are filtered or segregated by a grade (i.e., A, B, C, etc.). This is challenging us to find non-grading measures of success, i.e., science fairs, robotics, etc. for people who didn't get an A in physics.

Dennis: *Recommendation: This item needs to say more of what Diane just said [above]*

Public – Private Partnerships

Enhance Academic Relevance of STEM Curriculum

## Career Technical Education Redefined

### Popular Media and Technology

VC: This is helpful since it gets to strategies in addition to the “who.” This may be something to consider for inclusion in the May 19<sup>th</sup> forum—“how” do these things get implemented, etc.

### Informal STEM Opportunities

#### **Strategy Elements: EDUCATE**

JZ or DS: There is some connection here for Vicki’s group with respect to relevancy, visuals, and activities. Vicki, do you have comments on this list—either from your own reflection or that of your group? Are these covered?

VC: I think it is pretty well covered. You might have used different words, but they mean same: *experiential, hands-on, project-based/inquiry-based*. Three aspects for STEM success: technical, business, and real world—they may not be built into the curriculum per se, but they need to be built into teacher understanding.

Project/inquiry based, may not have been implied

DS: How do the bullets listed on the second “educate” slide fit into professional development:

CK: Focus on real world experiences that teachers can draw on; giving them experiences with real world, industry, etc. Think these points have been captured.

Overlap between this group and the Recruitment/Retention working group.

*Recommendation: It might be better to define these collectively*

DS: *Requested Cary’s assistance in developing a Venn diagram that illustrates the overlap between the three working groups.*

CK: I think they are all good, it is the right dialogue.

JZ: *Recommendation: Reconfigure the working groups [at May 19<sup>th</sup> Forum?] to create crossover between groups, highlight how they link together, don’t get lost in repetition.*

CK: In the Recruitment/Retention working group, they discussed how do you separate the two? Curriculum-is more content delivery, more assessment, Recruitment-is more experiential, less assessment

VC: You might be able to talk about “inspire”, etc. from the perspective of the student, the teacher, etc. You need to distinguish each so you know when you are talking about inspiring teachers or when you are talking about inspiring students, etc.. That way you will know whether the recommendation is for the teacher or student.

JZ: Right, you need to keep your audience in mind and how it fits.

*Recommendation: Include a session on this for the May 19<sup>th</sup> forum to flesh this out more.*

Each Student

Each Teacher

Vary Delivery to Include More Visual, Auditory, and Kinesthetic Activities

Provide Real Examples and Applications for Theoretical Concepts

Increase Relevancy by Connecting 3 R's

Expand STEM Activities p-20

Fund Materials and Facilities

Redefine Academic Relevance

Embrace Alternative Approaches

Identify Best Practices and Scale Up

Expand Student Exposure to STEM Career Options

Expand Internships for Students and Teachers\* (see discussion below)

Educate for Growth STEM Industries and Skills

### **Strategy Elements: EMPLOY**

Develop and Integrate Relevant Curriculum for Growth STEM Career Opportunities

VC: Question: Is the suggestion listed here as a recommendation in STEMCAP that we put in "relevant curriculum" or that there actually be an integrated curriculum?

DS: There could also be a third interpretation, which is to highlight the work of those that have integrated relevant curriculum. There is a need to develop more [curriculums?] and to address new fields like nanotechnology, etc. An opportunity to integrate new technologies into existing chapters. [This is saying,] "it needs to happen, not that it has already happened."

Dennis?: Existing curriculum throughout the state wasn't relevant to actual skills needed for technologies in existence or would be in existence at some point in the future.

CK: Addresses skills, focus on teacher training, teacher skills are lagging

VC: Textbooks--how to keep them updated/relevant? How to keep them more easily "updatable."

Identify Future Workforce Career Skills for Middle and High School Career Technical Education

Gain Agreement that One Goal of Education is to Prepare for Future Jobs

Link Education to California's Economic Vitality

Link STEM Courses to Current Academic Standards

New Marketing to Attract Students

Connect School and Family to STEM Employment

Provide Access to Job Experts

Increase Apprenticeships and Work Experience\*

David: *Recommendation: Change the word "apprenticeships" to "internships"*

CK: I think this was captured in educate component (see \* above)

FK: *Recommends including mentorships.*

VC: That would be good because in the overall goal, we're trying to increase the number of graduates in STEM, as well as the number of mentors.

CK: Mentorships, role models

Dennis: Would this fit better under educate?

CK: What are we trying to define? Action items to get to these points?

VC: *Recommendation: Table this topic for a side meeting—need to reevaluate everything and reconsider where the points should fall in a logical subdivision*

OK [Consensus]

Where should mentorship fit? Not sure, originally education slide, discussion point, fits along with same bullet of "internship, apprenticeship, mentorship" under educate slide

VC: *Recommendation: Maybe we should have an arbitrary category—such as if it deals with going into class room—it would fall under educate, out of classroom -employ*

CK: Teachers/others are not always allowed [to be mentors] because of time restraints and other restrictions that keep teachers from engaging outward

### **Working Group Notes**

Who?

Conditions?

[No comments]

## **Best Practices Criteria**

DS: Looking at practices currently in place

Measured

Evaluated

Both Formal and Informal (education)

VC: What was this discussion about?

DS: Educators thought their role not appreciated, yet this is where students get relevancy, everything from scouts (badges); should be a part of both and valued in both

Portable

Replicable

Applicable to Diverse Audiences

Inspiring

Access or Delivery Mechanism

Improve Cycle Defined

Success Based

Sustained

Relevant to STEM

VC: Needs to be relevant to industry

CK: Relevant to career/career connection

Innovative

Scalable

Partnerships Include all Stakeholders

Cross Segments

Defined Focus Area

Leadership Driven

Cost Effective - Affordable



DS: *Recommendation: One of the activities for the May 19<sup>th</sup> Forum should be creating one list of best practices that cut across all three groups, then separate those that are specific to each group*

JZ: Best practices in place, not to exclude things that have not been evaluated, what do you think about that?

CK: [Other group] called them “promising” practices to include new or pilot programs, used the same matrix for evaluation, see where it fell short, not sure how discussion ended.

VC: Yes, use as many criteria as possible

FK: This discussion sounds familiar, i.e., words like “promising”, “promising practices” seemed to be the consensus

VC: Separated the two to distinguish between those evaluated by a third party versus “pilot” programs

Anonymous: This sounds like the genesis of the Dec. 9<sup>th</sup> working group. Best practices-are more formalized, a blue print, it works, taken as such-a model to go to use.

Promising-are more informal, can almost make it your own; an idea to use, guides you

This input was provided as fyi for the discussion, the group needs to determine how it should use it.

Give caveat to both?

Nothing missing from list?

Dennis: “local context needed”—there is a need for context around these curriculum

Program that has applicability/put into inventory. Would you use these criteria to evaluate your program?

DS: probably wouldn’t list a “dance” model program

## **Measure of Outcomes**

Include Traditional Tests

College Entrance and Exit in STEM Majors

CK: *Recommends: Add: higher education degrees*

Community College Tech Training Completion

CK: The number of CTE and vocational ed at high school and expansion of program around bio tech, etc.

Job Employment, Applicants, Success

Gap Analysis

VC: Question: Is this saying it should be part of the STEMCAP or include in the STEMCAP a recommendation to do a “gap analysis”? The project goal doesn’t reflect us doing this.

DS: It is an important measure in curriculum area; access/equity issues addressed; disaggregating data;

VC: Question: If we are talking about measure of outcomes (short term/long term); there needs to be gap analysis as part of the STEMCAP. Gap analysis is suggested here, but not to do part of gap analysis as part of STEMCAP?

JZ: A “gap analysis” is something that should take place, not that we’re going to do it

CK: Can we even track how many students served?

VC: Need to be clear as to what the outcomes are—those that are achievable in the grant period (short-term outcomes), and long-term outcomes-things suggested as measurements for long term success; CSA/STEMCAP won’t be accountable for those.

### Success in Implementing Curriculum in MS and HS Cost

Number of Students (*add: and teachers*) Served

These two could be here or under gap analysis

CK: Engineering programs around HS and ROP programs that have emerged; can document number of classes.

Look at where they are happening: urban/rural

Final reflection on goal statement:

Anything to add/modify???

1. move “training” around in sentence
2. after preschool through university and incorporate life long learning

VC: The statement is fine, but did not suggest statement around it. We didn’t discuss the “fund” part of it.

DS: Good point, who might be able to accomplish some of these things?

Janet Tarjan: Measures-There was a recent CSU report released that disparaged community colleges because of transfer measurement. Students come in for a two year program and [they] give us a third year. Community Colleges sometimes need more than three years. [She gave the example of a student who has been there for 6 years and now he’s going to be an engineer. He is a failure in the eyes of the “measurements” because he has been there more than 2 years, but he considers himself a success because he’s going to be an engineer.]

*Suggestion: Community colleges need better representation in May 19 STEMCAP forum*

[There were some comments made in the context of this discussion about the community college student, how sometimes they take longer to get through school because of financial and/or family issues—or just plain life gets in the way type of issues.]

**Agenda for 5/19: topics/strategies as related to curriculum:**

More discussion on measures

Linkages between the 3 different groups

Strategies: not just the “what” strategy but also the “how”-the interim stage

Interim piece is a broad strategy like pre-service internships for teachers, informal science

JT: Appropriate timing/transferability of early field experience for science/math teachers

Developing pathways for teachers

Recap of all 3 groups before individual group breakouts

K-12 representation needed

Administrator attend/participate

*VC-Recommended to Deb sending out the information regarding the process for inviting people to the May 19<sup>th</sup> forum*

JT: Requested the link for the STEMCAP inventory [Deb to send it to her]