## SUMMARY AGENDA

### Thursday, April 4, 2013 - San Gabriel Hilton

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00 - 4:00 p.m.</td>
<td>WELCOME &amp;POSTER SESSION</td>
<td>San Gabriel Ballroom A</td>
</tr>
</tbody>
</table>
| 4:00 - 5:00 p.m. | PLENARY DISCUSSION  
  Mapping Your Progress | San Gabriel Ballroom A          |
| 5:00 - 5:30 p.m. | BREAK                                                  |                                 |
| 5:30 - 6:30 p.m. | RECEPTION                                              | Garden Terrace                  |
| 6:30 - 9:00 p.m. | DINNER & PLENARY  
  Making Sense of Your Data | San Gabriel Ballroom C          |

### Friday, April 5, 2013 - California State University, Los Angeles

**Note:** Parking Information and Campus Map  
Please check-out of hotel prior to meeting  
 See pages 39- 40

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 - 8:30 a.m.</td>
<td>BREAKFAST</td>
<td>Golden Eagle Ballroom I</td>
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<tr>
<td>8:30 - 8:45 a.m.</td>
<td>GETTING ORGANIZED FOR THE DAY</td>
<td>Golden Eagle Ballroom I</td>
</tr>
<tr>
<td>8:45 - 9:20 a.m.</td>
<td>CONCURRENT SESSIONS I</td>
<td>See pages 13 - 14</td>
</tr>
<tr>
<td>9:30 - 10:10 a.m.</td>
<td>CONCURRENT SESSIONS II</td>
<td>See pages 15 - 16</td>
</tr>
<tr>
<td>10:20 - 11:00 a.m.</td>
<td>CONCURRENT SESSIONS III</td>
<td>See page 18</td>
</tr>
<tr>
<td>11:15 - 12:00 p.m.</td>
<td>BIRDS-OF-A-FEATHER DISCUSSIONS</td>
<td>Golden Eagle Ballroom I</td>
</tr>
<tr>
<td>12:00 - 1:30 p.m.</td>
<td>LUNCH &amp; PLENARY PANEL OF EXPERTS</td>
<td>Golden Eagle Ballroom I</td>
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<tr>
<td>Time</td>
<td>Session</td>
<td>Location</td>
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<tr>
<td>1:30 - 2:30 p.m.</td>
<td>TEAM TIME</td>
<td>Unassigned Spaces in Golden Eagle Ballroom I &amp; II; Soriano Boardroom</td>
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<tr>
<td></td>
<td>Making Sense of Your Progress</td>
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<tr>
<td>2:30 - 3:00 p.m.</td>
<td>PLENARY TEAM REPORTS</td>
<td>Golden Eagle Ballroom I</td>
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<td></td>
<td>Logic Model Report Out</td>
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<tr>
<td>3:00 - 3:30 p.m.</td>
<td>CLOSING PLENARY</td>
<td>Golden Eagle Ballroom I</td>
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<tr>
<td></td>
<td>Updated Project Timeline &amp; Next Steps for 2013 - 2014</td>
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<tr>
<td>3:30 p.m.</td>
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This initiative aims to develop a comprehensive, institutional STEM Effectiveness Framework that will help campus leaders translate national recommendations for improving student learning and success in STEM into scalable and sustainable actions. The project will engage up to twelve selected colleges and universities in California to test evidence-based strategies that will lead to program, departmental, and eventually, institutional transformation.

The project leverages PKAL’s twenty years of STEM education research and reform experience in creating more effective curricular, teaching, and program strategies. Participating campuses will contribute to the development of a new framework that colleges and universities can use to measure their effectiveness in promoting more learner-centered campus cultures in STEM. The project will pay specific attention to program and institutional data that can be used to evaluate student achievement, experiences, and progress (e.g., rates of transfer, retention, and completion).

The distinctive impact of this project will be that for the first time, faculty and campus leaders will have an explicit tool through which to implement strategies that improve recruitment, access, retention, learning, and completion for all students in all STEM disciplines. The ultimate goal for this tool is to help campuses significantly improve student recruitment, access, retention, learning, and completion – particularly for under represented students - in more STEM courses and programs in California and across the nation.

The four-year project will involve teams of faculty, administrators, and assessment experts at selected institutions in California. Overall, campuses who commit to participating in the project will help develop and test the Framework in the context of their institutional priorities and resources, send a team to the annual project meetings, participate in quarterly project conference calls/webinars, and share their work with others for the final report and dissemination activities of the project.
With Gratitude

Project Kaleidoscope at the Association of American Colleges & Universities

thanks the W.M. Keck Foundation for making this event possible through its financial support.

We also thank the event leadership and facilitators for their contributions towards this event and

California State University, Los Angeles for its hospitality.
WELCOME & POSTER SESSION

Facilitator:

- Susan Elrod
  Dean of Science & Mathematics
  California State University, Fresno
  Senior Scholar
  Association of American Colleges & Universities

Notes:

Institutional change leaders should intentionally design change strategies that facilitate new sense, leaving behind old ideas, assumptions and mental models. Sense-making is difficult to capture directly. However, it is possible to identify activities in the change process where sense-making is likely to occur. Weick (1995) offers a set of seven sense-making properties that can be used as a template to identify sense-making activity:

- grounded in identity construction
- retrospective
- enactive of sensible external environments
- social
- ongoing
- focused on extracted cues
- drive by plausibility rather than accuracy

POSTER NOTES

California State University, East Bay


California State University Chancellor’s Office


California State University, Fullerton


California State University, Los Angeles


San Diego State University
POSTER NOTES

San Francisco State University

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W.M. Keck Science Department

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University of San Diego

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University of California, Davis

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PLENARY DISCUSSION

MAPPING YOUR PROGRESS

TIME: 4:00 - 5:00 P.M.                   DATE: APRIL 4, 2013                   LOCATION: SAN GABRIEL BALLROOM A

Facilitators:

- Susan Elrod
  Dean of Science & Mathematics
  California State University, Fresno
  Senior Scholar
  Association of American Colleges & Universities
- Vasti Torres
  Professor of Higher Education & Student Affairs
  Director of the Center for Postsecondary Research
  Indiana University Bloomington

Teams will discuss progress to date and create concept maps that connect inputs, processes, and outputs together (see list on the next page for terms). Teams will create maps on flip chart paper.

Notes:

PLENARY DISCUSSION

CONCEPT MAPPING TERMS

TIME: 4:00 - 5:00 P.M.                    DATE: APRIL 4, 2013                    LOCATION: SAN GABRIEL BALLROOM A

Possible Inputs:
- Faculty expertise
- Faculty time
- Student preparation
- Student interest/time
- Information/data available - internal
- Research/models/best practices - external
- Curricular structure (majors, GE, minors, course series, interdisciplinary or not)
- Organizational structure (incl committees)
- Campus events
- Administrative support/engagement
- Funding - internal, external
- Campus/dept policies
- Campus/dept plans, priorities
- Community groups, engagement
- Advisory committees
- Alumni
- Industry

Possible Measurable Outputs/Products:
- Student scholarship
- Graduated students
- Retained students
- More diverse student population
- Engaged alumni
- Employed graduates
- Post-secondary study by graduates
- Faculty publications, grants, scholarship
- Measurable changes in teaching practices, student learning
- Empowered campus leaders
- Team/community building - internal, external

Possible Processes:
- Faculty recruitment processes
- Faculty workload assignment
- Faculty promotion, retention and tenure process
- Student recruitment processes
- Student enrollment and retention
- Student matriculation/transfer processes
- Teaching & learning practices
- Curriculum/course design/redesign
- Curriculum review processes
- Accreditation
- Program review
- Faculty development
- Outreach
- Leadership development/succession
- Team/committee meetings
- Planning and assessment
- Evaluation
- Dissemination - internal, external

Best Idea:
DINNER & PLENARY

MAKING SENSE OF YOUR DATA

TIME: 6:30 - 9:00 P.M.  DATE: APRIL 4, 2013  LOCATION: SAN GABRIEL BALLROOM C

Facilitator:

- Vasti Torres
  Professor of Higher Education & Student Affairs
  Director of the Center for Postsecondary Research
  Indiana University Bloomington

Notes:

[There are] eight domains that define quality undergraduate academic programs and departments . . . :

- program climate
- assessment, accountability, and accreditation issues
- student learning outcomes
- student development
- curriculum
- faculty characteristics
- program resources
- administrative support

A logic model is a personalized institutional assessment map that allows all stakeholders to gain greater insight into the resources, processes, and range of outcomes needed to engage campus constituencies more widely in assessment efforts. Included here is a presentation on how to use this tool, as well as a series of templates for you to create logic models for outcomes at a variety of levels of assessment. This resource is meant to be a transferable, practical, and accessible approach to fostering a culture of assessment that can be readily implemented at the course, departmental or institutional levels.

The use of logic models is a strategy for facilitating dialog and disseminating data to maximize inclusion in the assessment process. The model itself is not unique – it exists mostly in the worlds of government and grant agencies – but its value is as yet under-appreciated for mapping coherent and integrated assessment across institutions toward desired outcomes. We need to think about assessment beyond a mode of data delivery, a demand of accreditation, or another survey to take. Instead, we must conceive of assessment as an avenue for conversation about learning and as a means to deepen collective understanding regarding general education (or other learning) goals.


Next Day:
Before 7:45 a.m.  Checkout from Hotel
8:00 a.m.  Buffet Breakfast at CSU, Los Angeles
Building: Golden Eagle; Room: Ballroom I (3rd Floor)
GETTING ORGANIZED FOR THE DAY

TIME: 8:30 - 8:45 A.M.                      DATE: APRIL 5, 2013                      LOCATION: GOLDEN EAGLE - BALLROOM I (3RD FLOOR)

Facilitator:

Susan Elrod
Dean of Science & Mathematics
California State University, Fresno
Senior Scholar
Association of American Colleges & Universities

Notes:

Institutions that focus attention and resources on the academic performance of students of all races in first-year science courses are much more likely to be effective in helping students in general—and minority students in particular—succeed. The most effective strategy for beginning the process of institutional culture change involves the use of focus groups designed to hear the perspectives of faculty, staff, and students about why students either achieve or do not. These conversations are crucial, because culture change requires careful self-reflection, robust dialogue, and rigorous analysis, both qualitative and quantitative, to understand trends in academic performance as a result of different intervention strategies. At UMBC, when we think about the culture of an institution, we think about our values, our practices, our habits, and even the relationships among faculty, staff, and students. The more inclusive the discussions are, the greater is the likelihood of getting broad support for institutional change and for building and taking advantage of the creativity of faculty members and students in problem solving.

CONCURRENT SESSION I

TIME: 8:45 - 9:20 A.M.               DATE: APRIL 5, 2013               LOCATION: LISTED BELOW

Instructions: Team members split up and attend different concurrent sessions.

California State University, East Bay
Transforming STEM Education Through Systems Change and Network Building
Session Location: Soriano Boardroom

Faculty and deans from the College of Science and the College of Education at Cal State East Bay have been working together for more than eighteen months to develop new systems and networks of support to advance STEM education. This session will provide an overview of the emerging systems/networks, will feature strategic initiatives that address the needs of students on campus and in the broader community, and will highlight the many partners contributing resources that are allowing for a larger collective impact.

San Francisco State University
Improving Student Success in STEM
Session Location: Golden Eagle - Ballroom II West

This session will give a brief overview of what led SF State to focus on improving student outcomes in STEM, with a special emphasis on traditionally underrepresented students. A team of biology and chemistry faculty members, in concert with Institutional Research, have analyzed data to determine where the challenges lie, and to develop strategies for addressing them. Questions will be posed to engage the participants in a discussion of best practices/challenges.

University of San Diego
Designing a Research Experience Based Curriculum
Session Location: Golden Eagle - Ballroom II East

In Fall 2012, the Biology Department of the University of San Diego launched a new biology majors curriculum centered on providing a research experience for every student. Based on decades of success with learning through independent projects within some upper division courses and voluntary student research participation with faculty members, we sought to engage every student in a similar process of research. After extended discussions of alternative models, we decided that a guided small group approach within the context of a course would be the most effective way to engage all of our majors. The specific project or methods courses are diverse, with the content of the research determined by different professors, but each class supports the goal of acquiring a common set of skills and competencies. For instance, Methods in Molecular Biology and Projects in Physiology are among the first offered and the repertoire will expand each semester. We identified key preparatory elements that would be introduced and practiced in the lower division courses, facilitating greater focus on an intensive research experience at the upper division. Greater emphasis on reading primary literature, working with spreadsheets and using basic statistics in introductory courses is being implemented. In this workshop, participants will create a model of their own investigation centered majors curriculum.
CONCURRENT SESSION I

Time: 8:45 - 9:20 A.M.                    Date: April 5, 2013                   Location: See Prior Page

Notes:
CONCURRENT SESSION II

Instructions: Team members split up and attend different concurrent sessions.

San Diego State University

Mind the Gap: Using the Science Literacy Concept Inventory to assess metadisciplinary understanding within the SDSU General Education program

Session Location: Soriano Boardroom

A common goal of many General Education (GE) programs is a metadisciplinary understanding of science as a dynamic process and way of knowing; however, constituent GE instructors may often focus on more course-specific student learning outcomes. We are exploring this potential program-course gap through the Science Literacy Concept Inventory (SLCI), a psychometric instrument developed by Nuhfer and co-workers. Our initial Spring 2013 effort involved deployment of the SLCI in seven lower-division “Foundation” GE science courses and six upper-division “Exploration” GE science courses (i.e., a total of 2,509 students representing an 81% response rate).

Based on t-test analyses using student-submitted information, SLCI scores show no significant difference by gender, but significantly lower scores for first-generation and English-as-second-language students. Scores were significantly higher for science majors, students having completed four or more science courses, and students with junior- or senior-standing. Scores showed more complex variations by race and by course, though most upper-division courses showed significantly higher scores compared to lower-division courses. Compared to an anonymized suite of peer institutions, SDSU showed relatively strong freshman-to-senior gains.

We are combining these SLCI results with more detailed institution-derived data to allow more sophisticated disaggregation and analyses (e.g., scores by incoming ACT/SAT, current GPA, and total units; scores by science versus non-science majors, etc.). In addition, we are mapping the SLCI items onto our GE program’s seven broad “Essential Capacities” and four specific “Natural Science Goals.” Finally, we are engaging faculty to raise awareness regarding the spirit and letter of our GE program and to share exemplary course-level approaches that promote program-level goals. Future efforts will likely deploy the SLCI during the first and final weeks of the semester, which should provide finer-resolution information for both program- and course-level assessment and revision.

W.M. Keck Science Department of Claremont McKenna, Pitzer, and Scripps Colleges

STEM Retention at the W.M. Keck Science Department

Session Location: Golden Eagle - Ballroom II West

The W.M. Keck Science Department of Claremont McKenna, Pitzer, and Scripps Colleges is committed to providing the best outcome for every student admitted to our interdisciplinary department. We will discuss a peer mentoring program, methods for engaging the campus community and institutional stakeholders, and our upcoming summer immersion bridge program.
University of California, Davis

The Birth of a Culture (of Data): From Meager Beginnings to Informing Faculty Decisions

Session Location: Golden Eagle - Ballroom II East

Discuss why a culture of data is a critical foundation for cultural change and sustained innovation in instruction.

- You can’t improve what you can’t measure
- Faculty won’t change without believing change is needed (Pointing the blame elsewhere - Creating the mirrors)
- “Don’t always believe what you think”
- Developing faculty/staff/administrator network
- Bringing data together, making it “usable”

Why the university’s analytics capacity had to be improved for iAMSTEM to do its job and our trials and tribulations to make that happen.

- Data at the speed of a paper report
- Supporting and enhancing faculty access to enable evidence-based decisions

A few surprising findings / mythbusting stories investigated so far that illustrate why decisions about instruction must be informed by data (and not rely on folk knowledge and age old assumptions).

- Where did all our majors go?
- Time to completion and number of degrees
- Those who leave STEM CAN indeed “hack” it
- Impact of upper division credits on time to completion
- Pilot interventions (more fully explored in our poster)
CONCURRENT SESSION II

TIME: 9:30 - 10:10 A.M.  DATE: APRIL 5, 2013  LOCATION: SEE PRIOR PAGE

Notes:
CONCURRENT SESSION III

Time: 10:20 - 11:00 A.M.                  Date: April 5, 2013                  Location: Listed Below

Instructions: Team members split up and attend different concurrent sessions.

California State University Chancellor’s Office
Building support for STEM education effectiveness across the CSU system
Session Location: Golden Eagle - Ballroom II West

In this interactive session, the Chancellor’s Office team will share our draft vision statement with CSU campuses to ensure it is reflective of a collective system-wide vision for STEM education effectiveness. Through small and large group discussions, we hope to learn about and identify areas of common interest and needs related to data, leadership, advocacy, and faculty professional development.

California State University, Los Angeles
The “M” in STEM is Music: Moving into The Future through Interdisciplinary Collaboration
Session Location: Golden Eagle - Ballroom II East

On our campus, a large number of students who enroll in science courses are not served by the traditional science career paths that are emphasized by the science departments. Our approach to this complex and difficult problem was to recruit a widely diverse interdisciplinary team. This collaboration has been the catalyst for unexpected and exciting new ideas and directions to serve these students. Through an interactive session, participants will engage in a concrete experience to ground their understanding of these broader abstract issues.
CONCURRENT SESSION III

TIME: 10:20 - 11:00 A.M.  DATE: APRIL 5, 2013  LOCATION: SEE PRIOR PAGE

Notes:

11:00 a.m.  Break
Research and experience tells us that academic leaders go awry for two reasons: 1) they see a limited or inaccurate picture - they miss important cues and clues in their environment - and as a result take the wrong course; and 2) they fail to take people along with them - they move too fast, to unilaterally, or without full appreciation of the power of cultural norms and traditions to enable others to buy into their plans.


**Instructions:** Return to the main plenary room and find a table labeled with a role you play on campus and/or in your project. Sit with these “birds of a feather” and share common challenges, strategies and lessons learned. Distribute team members and different tables where there are overlapping roles present.

- Institutional Research
- Faculty members
- Administrators
- CSU campuses
- Private colleges

**Common Challenges:** ____________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

**Interesting Strategies:** ____________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

**Lessons Learned:** ________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________
LUNCH & PANEL OF EXPERTS

TIME: 12:00 - 1:30 P.M.   DATE: APRIL 5, 2013   LOCATION: GOLDEN EAGLE - BALLROOM I

Panelists:
- Cynthia Bauerle
  Senior Program Officer
  *Howard Hughes Medical Institute*
- Sean Gehrke
  Research Assistant, Pullias Center for Higher Education
  *University of Southern California*
- David Marcey
  Fletcher Jones Professor of Developmental Biology
  *California Lutheran University*
- Emily Miller
  Project Manager of Undergraduate STEM Education Initiative
  *Association of American Universities*

Moderator:
- Susan Elrod
  Dean of Science & Mathematics
  California State University, Fresno
  Senior Scholar
  Association of American Colleges & Universities

Experts will share a few observations about the framework process, other national STEM education projects, etc.

Best Idea:
TEAM TIME

MAKING SENSE OF YOUR PROGRESS

Time: 1:30 - 2:30 p.m.                   Date: April 5, 2013

Location: Ballroom I & II; Soriano Boardroom

Instructions: Teams meet to share what they learned in the morning sessions and complete the development of a Logic Model that describes their project. Create a poster on flip chart paper that outlines the key elements of your Logic Model that will be shared with others. Identify one person to make a 2-3 minute presentation of key elements and insights gained during the process.

Notes:

“Collaboration is extremely difficult because not only are our organizations based on principles and structures antithetical to collaboration, so are our larger systems of government, foundations, disciplinary societies, and the like. So, the challenges exist within all parts of the system. Leaders . . . will be more successful encouraging collaboration if they can acknowledge their own challenges in collaborating, learn from these experiences, and try to be role models for higher education – a system that is even more embedded in an ethic that prevents collaboration.”

TEAM REPORTS

LOGIC MODEL REPORT OUT

Time: 2:30 - 3:00 p.m.           Date: April 5, 2013           Location: Golden Eagle - Ballroom I

Instructions: Teams will make 2-3 minute presentations of their models, focusing on key elements and insights gained during the process.

Notes:
## CLOSING PLENARY

### UPDATED PROJECT TIMELINE AND NEXT STEPS FOR 2013 - 2014

**Time:** 3:00 - 3:30 p.m.  
**Date:** April 5, 2013  
**Location:** Golden Eagle - Ballroom I

<table>
<thead>
<tr>
<th>When?</th>
<th>What?</th>
<th>Who?</th>
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<tbody>
<tr>
<td><strong>After April 2013 project meeting</strong></td>
<td>Organize a concurrent session for AAC&amp;U/PKAL STEM Education Conference -- Oct 31 - Nov 2, San Diego, CA</td>
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<td>Logic Models to be shared with all participating campus teams</td>
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<td>Framework model to be revised and distributed to participating campus teams</td>
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<td>Submit session proposal to AAC&amp;U annual meeting</td>
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CLOSING PLENARY

UPDATED PROJECT TIMELINE AND NEXT STEPS FOR 2013 - 2014

Time: 3:00 - 3:30 p.m.                   Date: April 5, 2013                   Location: Golden Eagle - Ballroom I

<table>
<thead>
<tr>
<th>When?</th>
<th>What?</th>
<th>Who?</th>
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<tbody>
<tr>
<td>Fall 2013</td>
<td>Continue program of webinars; topics to be determined</td>
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<td>Hold regional meetings in San Diego, Los Angeles, Bay Area</td>
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<td>Campuses continue work according to their plans</td>
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<td>Other?</td>
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</table>
## CLOSING PLENARY

### UPDATED PROJECT TIMELINE AND NEXT STEPS FOR 2013 - 2014

**Time:** 3:00 - 3:30 P.M.  
**Date:** April 5, 2013  
**Location:** Golden Eagle - Ballroom I

<table>
<thead>
<tr>
<th>When?</th>
<th>What?</th>
<th>Who?</th>
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<tr>
<td>Spring 2014</td>
<td>Present campus project results at AAC&amp;U annual meeting in January</td>
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<td>Mid-April - Project Meeting III</td>
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<td>Other?</td>
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## RESOURCES

<table>
<thead>
<tr>
<th>Appendices</th>
<th>Page</th>
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<tr>
<td>Narrative Framework</td>
<td>29</td>
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<tr>
<td>Chart Framework</td>
<td>31</td>
</tr>
<tr>
<td>List of Assessment Methods</td>
<td>33</td>
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<tr>
<td>Funding Sources</td>
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<tr>
<th>Event Information</th>
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<tbody>
<tr>
<td>Participant List</td>
<td>37</td>
</tr>
<tr>
<td>CSU Los Angeles - Directions from Hotel, Parking &amp; Map</td>
<td>39</td>
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</table>
Description of Campus Project (250 - 500 words):

Narrative Framework:

1. What is our **vision and goals**? Are they articulated in a way that will be clear to internal and external groups who we may need to communicate with and get support? How are these goals related to institutional priorities?

2. What **measures** will we use for achieving our goal(s) that we can collect data about so that we can document success to get on-going support? How can we leverage existing data collection/analysis mechanisms?

3. How will we know we are **performing (if at all) on the goals** currently so we can build off current efforts and not reinvent the wheel? What do we know about the historical challenges or aspects of the current context that might make this challenging?

4. What **interventions** will be needed comprehensively and holistically so that implementation is not thwarted by issues we did not consider? What interventions are supported by data and directed at solving the issues or challenges we have identified in 1 and 2 above? (Look to framework and notebook from first meeting for dimensions to consider)

5. What is our **plan for checking** in from time to time during implementation so that problems that emerge with respect to our change process can be addressed quickly? Is our team working well together? Does it have representation from necessary groups?

6. How will we **document our progress** over time (success, challenges, modifications, etc.), to both internal and external groups?
Description of Campus Project (250 - 500 words):

Framework:

<table>
<thead>
<tr>
<th>Dimensions: In what key areas does the campus need to work to achieve this vision?</th>
<th>A. What does this dimension look like?</th>
<th>B. What are the goals and measurable outcomes?</th>
<th>C. How will we know we are successful? What benchmarks will be used?</th>
<th>D. How are we doing? Where are the gaps? What are the challenges we face?</th>
<th>E. What interventions will we need to implement to reach our goals and vision?</th>
<th>F. How will we operate and learn as an organization?</th>
<th>G. How will we document our progress and success?</th>
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<tbody>
<tr>
<td>1. Institution Learning and Leadership</td>
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<td>2. Faculty work related to educational mission/objectives</td>
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<td>3. Student Success</td>
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<td>4. External stakeholders and partners</td>
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FUNDING SOURCES

KECK/PKAL STEM EDUCATION EFFECTIVENESS FRAMEWORK PROJECT
DECEMBER 3, 2012

HHMI (Howard Hughes Medical Institute)
http://www.hhmi.org/grants/

W.M. Keck Foundation
http://wmkeck.org/grant-programs/undergraduate-program.html

NSF:
Most opportunities are through the Division of Undergraduate Education (DUE). Here is a link to their funding opportunities webpage: http://www.nsf.gov/funding/pgm_list.jsp?org=DUE. Programs of most relevance to this project are:
• TUES (Transforming Undergraduate Education in STEM)
  http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5741
• WIDER (Widening Implementation and Demonstration of Evidence-Based Reforms)
  http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5741
• STEP (STEM Talent Expansion Program)
• S-STEM (Scholarships in STEM)
• LSAMP (Louis Stokes Alliance for Minority Participation)
  http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13646
• RESEE (Research and Evaluation on Education in Science and Engineering)
  http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13667
• Integration with broader impacts portion of research grants

NIH:
• MBRS (Minority Biomedical Research Support)
• MARC ( Minority Access to Research)
• Bridges to Baccalaureate
  http://www.nigms.nih.gov/Research/Mechanisms/BridgesBaccalaureate.htm

Department of Education:
• HSI-STEM (Hispanic-Serving Institutions - STEM)
  http://www2.ed.gov/programs/idueshsi/index.html
• Higher Education Programs
  http://www2.ed.gov/about/offices/list/ope/hep.html
• An interesting STEM education resource page: http://www.ed.gov/college-completion/promising-strategies/tags/STEM
ASSESSMENT METHODS/TOOLS
PROPOSED BY CAMPUSES

KECK/PKAL STEM EDUCATION EFFECTIVENESS FRAMEWORK PROJECT
NOVEMBER 26, 2012

Student success measures
• Monitoring enrollment of first-time freshmen declaring STEM major
• Graduation rates in STEM, total, latino/a, all URMs
• Graduation rates of URMs to measure gap
• Graduation rates of STEM students who declared STEM but may have transferred to another major
• Monitoring completion of core courses in STEM majors
• Monitoring of achievement of graduation milestones (percent who achieve)
• Retention of students throughout program
• Retention of all students
• Departmental retention data
• Data on High Impact Practices in STEM programs and their correlated learning gains, student retention and other benefits
• STEM enrollments, freshmen and transfer retention rates, graduation rates
• Student performance (grades) in major courses of students (disaggregated by gender, ethnicity and other identified factors)

Faculty Activity/Participation Data
• Faculty participation in faculty development programs; tracking of faculty participation
• Faculty participation in developing new approaches to teaching; introduction of cooperative learning
• Community development measures (report outs, publications, website, workshops at CSU meetings and other venues)
• Incorporation of coordinated layers of research-based experiences into the curriculum
• Regularly updated data shared w/ colleagues to demonstrate pedagogical approaches that correlate w/ academic success
• Changes in course syllabi
• Increased success in obtaining STEM education grants, gifts and/or contracts
• Community development/participation
• Track grant submission success (large center grant, other broader impacts engagement w/ programs
• Identify and catalog activities of STEM community
• Development of a survey instrument to assess status of faculty involvement w/ evidence-based teaching and student learning
• Identify/catalog instructor innovations in courses -- correlation with improvements in student learning
• Measurement of High Impact Practice (HIP) implementation in STEM courses w/ correlated measures of impacts on retention, graduation rates, reduction of achievement gaps, etc.

Learning Data
• Outcomes measures for grads and alumni
• Use of pre-/post-tests to determine learning gains, use of CAT test, rubrics, student perception surveys;
• Analysis of learning outcomes levels (using Bloom’s taxonomy)
• Assessment of scientific literacy conceptual understanding (process of science) using the Scientific Literacy Concept Inventory (or something similar)
Student Activities/Participation Data

- Student participation in new programs
- Track how many students use advising services
- Engagement of students in tutoring/learning center supported programs (disaggregated by gender, ethnicity and other identified factors)

Other Data

- Post-graduation success
- Alumni communication with departments
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Directions from Hotel to Campus

1. Head west on W Valley Blvd toward Abbot Ave
2. Turn left onto N New Ave
3. Slight right to merge onto I-10 W toward Los Angeles
4. Take exit 21 toward Long Beach
5. Stay on Exit 21, follow signs for Eastern Avenue
   Destination will be on the right
6. 5151 State University Dr, Los Angeles, CA

Campus Parking

Upon arrival to campus, please stop by the Welcome Center or the Information Kiosk to pick up your parking permit. Please indicate that your parking has been reserved under the Keck/PKAL Meeting. Please hang permit in rear view mirror. You will then be directed to park on Lot 4. See map on next page.
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