OVERVIEW

The California State University (CSU) Consortium was awarded NGLC follow-on funding to expand the CSUN-Consortium’s Wave I Hybrid Model for student success in introductory mathematics courses. The new CSU-Consortium seeks to scale the model to reach students in entry-level math and “gateway” science courses at 18 of the 23 CSU campuses and at four of the nine Los Angeles-area community colleges over the next five years. The consortium is well on its way to achieving this goal and is ahead of schedule with respect to the timeline proposed for follow-on funding. NGLC, the CSU Chancellor’s Office, the CSU Council of Math Chairs, and the California Community Colleges System (CCCS) support the consortium financially and logistically.

The consortium project is finishing up Phase II and starting Phase III of a three-phase development plan:

• Phase I was funded by the Wave I NGLC grant during the academic year 2011-2012 and is completed. It expanded the model beyond CSU Northridge (CSUN) to three other collaborating campuses.

• Phase II is funded by the follow-on NGLC grant for the period between January 1, 2013 and December 31, 2014. It has expanded the consortium from the original three CSU campuses and one CCCS campus to nine CSU campuses (more than the six CSU campuses proposed) and four local CCCS Los Angeles-area campuses (more than the two campuses proposed, and meeting our 2017 goal for CCCS). We have been able to fund more campuses than originally proposed by cutting back on CSUN administration funding (for grant manager) and by using internal funds to support CSUN projects.

• Phase III has begun ahead of schedule, thanks to the project having received some of the $10 million allocated by Governor Brown to the CSU in support of course redesign. With this financial support, we will have added three campuses (CSU Bakersfield, East Bay, and Stanislaus) to our consortium in the 2013-2014 academic year, putting us at 12 out of 23 CSU campuses participating.

Our goal of 18 CSU campuses and four CCCS campuses by 2017 is well within reach. Equally important, we have taken the first step in transferring “ownership” of the project from the individual campuses to the CSU Math Council and the CSU System and CCCS offices where it rightfully belongs.

The CSU has 420,000 students enrolled on its 23 campuses statewide, and the CCCS has nine campuses in the L.A. district enrolling 250,000 students. We currently have almost 10,000 students enrolled annually in courses supported by the grant. Participants are excited by their projects and all are ahead of schedule. A new sense of community is developing among the CCCS campus math departments in Los Angeles as well as among the math and science departments in the CSU. They are starting to think in terms of system-wide redesign and the economies that can be found in scaling within the systems.

1. ACCOMPLISHMENTS: RECRUITING, REPOSITORY, AND DATABASE

With NGLC follow-on funding for Phase II, the CSU-Consortium has employed a multi-pronged strategy to expand and amplify the accomplishments begun in Phase I under the Wave I grant by (1) scaling out our Hybrid Model to other CSU and CCC campuses as well as expanding implementation within existing campuses; (2) expanding access to the Hybrid Model by creating an easily accessible repository of all course and training materials; and (3) expanding the rigorous approach to proven course design by building a database of student data from every campus for every redesign project. Over the last nine months, we have followed through on all three strategies, and this has put us in a strong position to support our 16-campus-strong consortium as their implementations mature. We have expanded our positive impact on student success and persistence not only by adding more courses, but also by providing more instructor training and more classroom facilities; improving assessment; providing professional and student staff salaries; and improving data collection and analysis.
• **Recruiting and Expanding to Scale.**
  - Consortium campuses (including three CSUs recruited and funded by the CSU) are currently
    - 12 California State Universities: Bakersfield, Channel Islands, Dominguez Hills, East Bay, Humboldt State, Long Beach, Los Angeles, Monterey Bay, Northridge, Cal Poly Pomona, San Francisco State, Stanislaus.
    - four California Community Colleges: Long Beach City College, Moorpark College, Pasadena City College, Pierce College.
  - Expanding implementations within existing campuses. CSULB has expanded to two chemistry courses, CSUN is exploring adding the model to chemistry with internal funds, and CSUMB has added more math courses, including statistics.
  - 2013 campus support activities included site visits and our August 7th Convening. The convening marked an important milestone as it was sponsored jointly by NGLC and the CSU Chancellor’s Office. We were very pleased to host Nancy Millichap. Specific support activities are listed in Supplemental Materials Section C.

• **Creating the Hybrid Model Resources Repository (HMRR).** For the repository, the consortium collaborated with CSUN’s Library and uses ScholarWorks to provide a secure place for consortium members to share their curricular and training materials. Librarian Andrew Weiss built the ScholarWorks site and continues to maintain it. It is already being used by the next wave of new consortium members (both those funded by NGLC and those funded by the CSU). Over the current academic year we will run monthly “tours” through each campus’s contributions to the repository. This will be done in online webinars using Blackboard’s Collaborate in conjunction with the activities surrounding the CSU funding. To see what is available on the repository, please log in to it as a guest. (See Supplemental Materials Section D for instructions.)

• **Building an Assessment Database.** In collaboration with CSUN’s Information Technology Division, Michael Crosswhite built a common database to house all the data related to the consortium’s work. This database structure was then moved to CSUN’s Institutional Research Department to aid in the task of obtaining data from other campuses. In this way, data do not change hands as often and are more secure. Moreover, the data are centrally located, which facilitates the measurement of progress for consortium members, and the database provides data analysis tools to each campus for use on their own data. Access is provided using Oracle Business Intelligence software. Data collected include: final grades in past, current, and subsequent courses; scores on exams, homework, and remediation; and student background information (e.g., ethnicity, economic status, first-generation college student).

2. **WORK PLAN MEETS TARGETS**
The numbers of students enrolled in courses that used the Hybrid Lab Model in the academic year 2012-2013 are listed in the table below. The figures show a three-fold increase over our Wave I numbers.

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
<th>Total AY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal State Northridge</td>
<td>Math 103</td>
<td>828</td>
<td>610</td>
</tr>
<tr>
<td>Cal State Northridge</td>
<td>Math 104</td>
<td>390</td>
<td>385</td>
</tr>
<tr>
<td>Cal State Northridge</td>
<td>Math 102</td>
<td>946</td>
<td>602</td>
</tr>
<tr>
<td>Cal State Long Beach</td>
<td>Math 113</td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td>Cal State Long Beach</td>
<td>Math 115</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Cal State Long Beach</td>
<td>Chem 101</td>
<td>500</td>
<td>400</td>
</tr>
<tr>
<td>Cal State Long Beach</td>
<td>Chem 111A</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Cal State Long Beach</td>
<td>Chem 111B</td>
<td>350</td>
<td>350</td>
</tr>
</tbody>
</table>
In the current academic year, 2013-2014, our numbers are expected to grow as new campuses come on board and established consortium members continue to expand. For example, this fall, Long Beach City College and Pasadena City College launched their Accelerated Developmental Math sequences. Based on initial success in the fall term, they expect to have follow-on pilots in the spring adding approximately 200 CCCS students to the headcount. Moorpark College will start its pilot in spring with approximately 2-3 sections of Pre-Calculus. The only campus of concern is Pierce College, where the project leads recently retired and the project itself seems to lack the support of the math department. Their funding will be significantly cut back in 2014.

Within the CSU system we started the follow-on funding with the three original CSUs (CSUN, HSU, CSULB) plus two new additions (CSUCI and CSUMB). The projects at these five campuses are progressing nicely. Please see Supplemental Materials Section A for details of activities on the CSU campuses and Section B for evidence of success.

The four CSU campuses that joined the consortium this summer are off to strong starts on the following projects.

- **CSULA:** Pre-Calculus Math 104A: 2 sections in fall and all sections in spring (~500 students).
- **SFSU:** Pre-Calculus Math 109: 2-3 sections in fall and 3-4 spring (~240 students over this academic year). Potential if fully implemented: 700 annually starting in Spring 2013.
- **CSUDH:** Pre-Calculus sequence: Math 147 and 149, 3-4 sections in spring (~160 students over this academic year). This includes all sections of the class, so this project will be scaled to the fullest.
- **Cal Poly:** Pre-Calculus Math 105: 1 section in fall and spring (~70 students total over the year). Potential if fully implemented: 2500 students annually.

### 3. MAJOR CHANGES IN CONDITIONS

As mentioned in the Overview, Phase III began ahead of schedule with last-minute funding from the State. In collaboration with CSU Fullerton, we were one of only five “Proven Redesign Models” to receive the CSU funding. We are the only project in mathematics, and the chemistry project funded by the CSU is a splinter off of our Chemistry Consortium members at CSULB. By all measures, our “Proven Redesign Model” is the farthest along in terms of scaling and data. With the CSU funding, three new campuses joined our consortium in October. They propose to run pilot redesign courses using the model in Spring 2014:

- **CSUB:** CSU Bakersfield - Calculus I
- **CSUEB:** CSU East Bay - Business Math from CSUN
- **CSUS:** CSU Stanislaus - Calculus I

### 4. ADMINISTRATIVE CHALLENGES

The administration of such a large project covering 16 campuses is a logistical balancing act. The grant budget included funds for a grant manager to help manage the grant. The first grant manager was Melissa Burns. She was a highly competent manager and aptly saw the consortium through the frenzied application process. She was also fundamental in pulling together the teams from the Library and Information Technology to build the repository and database. However, after recruitment was done and the subcommittees were formed, she was not ready to take over the higher-level interactions with the...
academics at the other campuses. Because of the delicacy of the interactions, these tasks have to be
done by a fellow academic. Thus PI Stevenson still manages all of the academic relationships. Ms.
Burns moved on to an exciting new career opportunity, and was replaced by a CSUN staff member, Ana
Quiran, who has done an outstanding job helping to maintain relationships with the administrators on
other campuses, maintaining the files (IRBs, narratives, data and repository submissions), and managing
the budget (in the NGLC format and in the CSUN format, and in a “cheat-sheet” that the PI can
understand). She took over this job as an overtime assignment, working 10 hours per week. Ms. Quiran
works full time in the Institutional Research office as an analyst. Her understanding of data security as
well as her connections in IR, have been invaluable to the grant. Grant funds from salary savings have
been reallocated to the subcontracted campuses.

5. REVISIONS

As indicated above, we are ahead of schedule in terms of recruiting campuses. We do not expect to
need more time to meet the recruitment targets; however, it may take some campuses an extra six
months to complete their projects (using already allocated funds). Our fast-paced growth has strained the
grant’s resources greatly and required some budget adjustments. The main categories for changes are
listed below. Please see our interim budget report for more details.

- We have allocated more money to the subcontractor campuses.
- We have saved money on the grant manager position.
- We have used overhead money paid back to PI Stevenson to fund CSUN projects (leaving more
  money for subcontractor campuses).

6. PLANS

In the first six months of the follow-on funding, the consortium’s main focus was on recruitment and
infrastructure (repository and database development). Starting in August we shifted our focus to support
services. We are now helping the new campuses get off the ground with their projects, and helping the
mature projects stay on track in terms of materials development, model implementation, and data
collection. The campuses that are most on track will be allocated the NGLC funding expected in
January 2014. In Spring 2014, we will have a convening for the community colleges where activity is
exploding on three campuses. There are plans to apply for separate private funding to expand CCCS
participation. In Summer 2014, we will again convene the CSU-Consortium, where campuses can share
their successes and brainstorm on the failures. We will work with the CSU System offices and CSU
Math Council to apply for both public and private system-wide financial support for the consortium.

CONCLUSION

Our additional work has vastly expanded the scale of our innovation to realize NGLC’s goals.
Students in our publicly funded consortium campuses are diverse and are often the first in their families
to attend college. In fact, the CSU featured importantly in the critically acclaimed documentary “First
Generation.” All of our original and expansion campuses are federally classified as Hispanic Serving
Institutions (HSIs), a designation that also indicates the high financial needs of most students. Students
enrolled in our consortium campuses who enter with math learning deficits will spend less time in
remediation, and progress rapidly toward meeting degree requirements. These students will graduate
sooner, lowering total educational costs to themselves and to their financially stressed families. Our
Hybrid Model course offerings are also cost-efficient for educational providers: Increased student
success in these courses reduces the number of students repeating classes, realizing substantial
institutional savings from offering fewer course sections. Such savings will contribute to the
sustainability of the Hybrid Model and incentivize further scaling up: By lowering the number of math
courses that institutions need to offer for remediation, institutional funds are freed up for implementation
of more Hybrid Model courses, without recourse to external grant awards.
SUPPLEMENTAL MATERIALS

A. Details on CSU projects that are started in January 2013:

- **CSUMB** completed its redesign pilot of pre-calculus (Math 130) in spring 2013. Now in Fall 2013 the hybrid lab model is fully scaled to all sections of Math 130. In spring 2013, passage rates in the pilot jumped to 86% from historical levels of approximately 60%. Even more impressive, these results were achieved with a class of 65 students whereas normally Math 130 has sections with 30-45 students. CSUMB is expanding the model to Statistics in spring 2014 with funding from the CSU Chancellor’s office. The goal is to replicate their pre-calculus success: increasing class size from 28-30 to 60-65 while improving passage rates. They will also add supplemental instruction to Calculus.

- **CSULB** was an early adopter and co-creator of the hybrid model. They have been supported by NGLC since 2010 for Business Math (Math 115) and since 2012 for Pre-Calculus Algebra (Math 113). They had proposed to work on Math 111 as well, but when the business school abruptly revised their math content requirements in Fall 2012, CSULB refocused on Math 115 as a priority. In summer 2013, Newberger revised all Math 115 materials to accommodate the change of content coming from the college of business. These materials are in full use in fall 2013. In spring 2013, they implemented the on-line homework and individualized remediation through ALEKS in all sections of Math 113. They also included some common problems on the final exams. In fall 2013, they are adding common lecture notes and off-line homework and common midterm, and final exams for the first time.

- **CSUCI** completed the 30 supplemental instruction modules for Math 399 in spring 2013. Each section of Math 399 is dedicated to the support of a high-enrollment, high-stakes course (pre-calculus, business calculus, calculus, and statistics). There are also two sections of Math 399 that support more advanced math courses. Math 399 provides "just in time" support and remediation to students. The sessions provide software workshops (Excel, SPSS, Maple, MathLab), supplementary problem solving activities, quick reviews of required material, concept handouts and homework help. While Math 399 is not mandatory for students, 238 students register for the course in spring 2013, and 266 students registered in fall 2013. Lab sections supporting pre-calculus and statistics courses had enrollment exceeding 40 students in each lab. While these sections existed prior to spring 2013, the innovation was to unify the curriculum by creation of short modules that could be used in support of many different courses across the curriculum and to ensure the quality of instruction in Math 399 by standardizing its content. CSUCI is in the process of analyzing data on grade improvements/passing rates from last academic year and already registered noticeable increase of enrollment in calculus sections (that maybe attributed to better preparation of pre-calculus students that participated in the labs). Based on the spike in participation in Math 399 this spring and fall 2013 (over 500 students total), CSUCI has decided to expand the project and are developing at least 25 new modules for use in Math 399.

- **HSU** completed full implementation of the hybrid model into Math 115. They saw passage rates move from 63% to 68% in the first two terms under the implementation of this project. They are now looking at how these students do in Calculus I. HSU is finished with funding.

- **CSUN**’s Business Math (Math 103) is fully implemented and scaled. It is now ready for export under the CSU program. CSU East Bay (CSUEB) will implement CSUN’s Math 103 at their campus as a pilot in Spring 2014. We are preparing the materials for their use (they are a quarter
campus). In addition, CSUEB’s Prof. Shirley Yapp will bring her programming skills to the project by working with CSUN’s Prof. Jorge Balbas to enhance our textbook with live interactive applets. Trigonometry (Math 104) is fully implemented and scaled. College Algebra (Math 102) has been implemented, but lags behind the success of Math 103 and 104 due to dissention in the department regarding the content. Math 102 is not receiving NGLC funding, but the department is nearing consensus on the dissension of content between 102 and 104 and the redesign will be completed with funding from CO and math department.

B. Longitudinal studies of the model’s success at three campuses:

**CSUN Business Math 103:**

![Graph showing grades distribution over multiple semesters]

**CSUMB PreCalculus Math 115**

![Graph showing percentage of students passing over multiple semesters]
Our recruitment was focused this year on our two partner systems: The CSU and the CCCS. Stevenson has carried out more than 15 campus visits and facilitated partnerships between consortium members. Ivona Grzegorczyk, chair of the CSU Math Council, has begun a tradition of reporting on the Consortium’s progress and encouraging other such council-based initiatives. Ephraim Smith (vice-Chancellor of the CSU) presented our project to the Board of Trustees at the fall meeting this year. Governor Brown was present. Specific activities included:

- In Spring 2013, we recruited 6 additional CSU campuses and 3 additional CCCS campuses. The recruitment and review process followed the timeline below:
  - December 2012 & January 2013: Create an online application process.
  - January & February: Recruitment visits by Stevenson to 5 CSU and CCCS campuses and coordination visits to the CSU Chancellor’s Office.
  - April 4 & 26, 2013: Advisory Board meetings to review the CSU and CCCS applications separately. These included Veronica Diaz from NGLC, Ken O’Donnell from the CSU, and James Stigler from UCLA.
  - March – May 2013: Follow up with each accepted campus to make sure that the Advisory Boards concerns were met before money was granted.
  - Summer 2013: CSU Sponsored Projects and Corporation set up of sub-award agreements.

- 2014 campus support activities included site visits and our August 7th Convening. The convening marked an important milestone as it was sponsored jointly by NGLC and the CSU Chancellor’s office. We were very pleased to host Nancy Millichap. Specific activities included:
August 7, 2013: CSU Campuses Meeting at CSUN, Nancy Millichap and CSU executive committee members present.

September 10, 2013: Pasadena City College (PCC) campus visit by Stevenson and Crosswhite (data analyst).

September 27, 2013: CSU Campuses luncheon at Math Council meeting (CSUMB, CSUCI, CSUN, CSULA, CSUDH, HSU, SFSU present)

October 1, 2013: Check-in phone conference with San Francisco State University.

October 4, 2013: Visit to Long Beach City College by Stevenson, Crosswhite, Nemeth, and PCC group to discuss accelerated pathways through Developmental Math.

October 11, 2013: Nemeth campus visit to Moorpark College.

Bi-weekly CSU Professional Learning Community meetings starting October 2013.

October 31 – November 4, 2013: Video taping by Lou Zweiler to enhance training materials.

Monthly online “tours” of the Repository starting December 2013.

Februray CCCS convening.

D. Repository: Guest Login Instructions

- [http://scholarworks.csun.edu/password-login](http://scholarworks.csun.edu/password-login)
- username: csunmathhybrid@gmail.com
- password: hybrid2013
- There’s a long list of possibilities. Scroll down to find: Hybrid Model Resources Repository
- Or, once logged in you can go directly to [http://scholarworks.csun.edu/handle/10211.2/2902](http://scholarworks.csun.edu/handle/10211.2/2902)