EAP Professional Development

- A strong component of the EAP is teacher professional development. CSU faculty collaborating with K-12 Educators have developed PD in both English and mathematics to support a path to proficiency in both reading and math.

- In English we have:
  - The Expository Reading and Writing Curriculum

- In Mathematics we have:
  - Strengthening Mathematics Instruction
Welcome to the CSU Success Website

Prepare now for college math and English.

Get ready for the CSU by visiting the Math and English Success websites. Each site contains a step-by-step personalized roadmap, exam preparation tools, testimonial student videos, access to your Early Assessment Program test scores, and e-mail reminders to ensure that you are ready for the CSU.

Check your EAP Status

12th Graders

Find Out Your EAP Status

Math Success
- Students
- Parents
- Teachers
- Counselors

English Success
- Students
- Parents
- Teachers
- Counselors

http://www.csusuccess.org/shome
Professional Development in Mathematics begins with an online component that provides an overview of EAP.
## EAP Math Statewide Results

<table>
<thead>
<tr>
<th>Year</th>
<th>Participation</th>
<th>College Ready</th>
<th>College Ready-Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>137,067 (74%)</td>
<td>16,120 (12%)</td>
<td>58,822 (43%)</td>
</tr>
<tr>
<td>2007</td>
<td>141,648 (70%)</td>
<td>17,173 (12%)</td>
<td>60,697 (43%)</td>
</tr>
<tr>
<td>2008</td>
<td>147,885 (70%)</td>
<td>19,442 (13%)</td>
<td>62,660 (42%)</td>
</tr>
<tr>
<td>2009</td>
<td>169,473 (77%)</td>
<td>22,246 (13%)</td>
<td>74,464 (44%)</td>
</tr>
<tr>
<td>2010</td>
<td>178,667 (77%)</td>
<td>26,056 (15%)</td>
<td>77,053 (42%)</td>
</tr>
<tr>
<td>2011</td>
<td>190,946 (80%)</td>
<td>29,526 (15%)</td>
<td>81,856 (43%)</td>
</tr>
</tbody>
</table>

## Math Remediation Results

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Freshman</th>
<th>Number Proficient</th>
<th>Percent Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43,005</td>
<td>27,426</td>
<td>63.8%</td>
</tr>
<tr>
<td>2006</td>
<td>46,081</td>
<td>28,778</td>
<td>62.5%</td>
</tr>
<tr>
<td>2007</td>
<td>49,274</td>
<td>30,954</td>
<td>62.8%</td>
</tr>
<tr>
<td>2008</td>
<td>50,187</td>
<td>31,527</td>
<td>62.8%</td>
</tr>
<tr>
<td>2009</td>
<td>50,367</td>
<td>31,407</td>
<td>62.4%</td>
</tr>
<tr>
<td>2010</td>
<td>47,885</td>
<td>30,973</td>
<td>64.7%</td>
</tr>
</tbody>
</table>

http://www.asd.calstate.edu/proficiency/2010/Prof_Sys_fall2010.htm
## Exempt from ELM

<table>
<thead>
<tr>
<th>Year</th>
<th>EAP</th>
<th>College Credit</th>
<th>AP Credit</th>
<th>SAT II</th>
<th>SAT 1 or ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>2,698</td>
<td>352</td>
<td>1,907</td>
<td>2,359</td>
<td>11,274</td>
</tr>
<tr>
<td>2006</td>
<td>2,922</td>
<td>471</td>
<td>1,980</td>
<td>1,787</td>
<td>11,595</td>
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<tr>
<td>2007</td>
<td>3,892</td>
<td>544</td>
<td>2,217</td>
<td>2,012</td>
<td>12,031</td>
</tr>
<tr>
<td>2008</td>
<td>3,944</td>
<td>624</td>
<td>2,426</td>
<td>2,101</td>
<td>11,991</td>
</tr>
<tr>
<td>2009</td>
<td>2,790</td>
<td>608</td>
<td>2,760</td>
<td>2,422</td>
<td>12,020</td>
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<tr>
<td>2010</td>
<td>4,832</td>
<td>1,132</td>
<td>2,128</td>
<td>1,838</td>
<td>11,497</td>
</tr>
</tbody>
</table>

[Exempt from ELM](http://www.asd.calstate.edu/scripts/hsrem09/hsrem09.idc?campus=013022)
## Math Proficiency

<table>
<thead>
<tr>
<th>Year</th>
<th>Exempt from ELM</th>
<th>50 or above on ELM</th>
<th>Other</th>
<th>Prof</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>45% (18,590)</td>
<td>17%</td>
<td>1%</td>
<td>63%</td>
</tr>
<tr>
<td>2006</td>
<td>42% (18,755)</td>
<td>19%</td>
<td>1%</td>
<td>62%</td>
</tr>
<tr>
<td>2007</td>
<td>44% (20,696)</td>
<td>17%</td>
<td>1%</td>
<td>62%</td>
</tr>
<tr>
<td>2008</td>
<td>44% (21,086)</td>
<td>18%</td>
<td>1%</td>
<td>63%</td>
</tr>
<tr>
<td>2009</td>
<td>43% (20,600)</td>
<td>19%</td>
<td>1%</td>
<td>62%</td>
</tr>
<tr>
<td>2010</td>
<td>46% (21,427)</td>
<td>16%</td>
<td>1%</td>
<td>64%</td>
</tr>
</tbody>
</table>

### EAP Math Professional Development

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshops</td>
<td>24</td>
<td>15</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Attendees</td>
<td>800</td>
<td>455</td>
<td>283</td>
<td>54</td>
</tr>
</tbody>
</table>

### SMI Professional Development

<table>
<thead>
<tr>
<th></th>
<th>2009-2010</th>
<th>2010-2011</th>
<th>2011-2012</th>
<th>2012-2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshops</td>
<td>20</td>
<td>10</td>
<td>Approx</td>
<td>15</td>
</tr>
<tr>
<td>Attendees</td>
<td>450</td>
<td>300</td>
<td>Approx</td>
<td>300</td>
</tr>
</tbody>
</table>
To enhance student mathematics proficiency and understanding by

- Highlighting and encouraging use of research-based best instructional strategies
- Developing a common emphasis on infusing SMI strategies across same-level courses (horizontal) and among sequential courses (vertical)
- Providing a forum to plan implementation of SMI strategies in order to achieve systemic growth in mathematics teaching and learning at the site and/or district level.
Workshop Outcomes

- Identify instructional strategies that will help students organize and solidify conceptual understanding
- Identify characteristics of cognitively complex problems
- Locate standards-based cognitively complex problems within participants’ classroom texts
- Modify standards-based textbook problems to increase the level of cognitive complexity
- Practice writing standards-based cognitively complex problems
- Experience the varying roles in the teacher/learner continuum
- Model a variety of student engagement strategies
Cognitively Complex Problems

These types of problems require students to

- Extend previously encountered tasks
- Integrate several topics and/or concepts
- Recognize and use underlying mathematical structures
- Use multiple representations
- Consider multiple approaches to the problem
- Identify patterns
- Be flexible and strategic in their mathematical thinking
The 8 Modules

- Setting the Stage
- Deconstructing
- Integrating
- Multiple Representations

- Extending Procedures
- Flexibility
- Strategic Thinking
- Roadblocks
Example 3 – The Real Numbers

Lower cognitive complexity

Arrange the numbers in increasing order from smallest to largest

\[
\frac{5}{3} \quad -1 \quad \sqrt{3} \quad 2^{-1} \quad 0
\]

Higher cognitive complexity

If \(0 < x < 1\), arrange the terms in increasing numerical order from smallest to largest

\[
\frac{1}{\sqrt{x}} \quad x^2 \quad \frac{1}{x} \quad -x^2 \quad -\frac{1}{x} \quad \sqrt{x}
\]
Locating Cognitively Complex Problems

1. Choose a section or chapter in your textbook that you will be teaching in the next few weeks.
2. Use post-it notes to indicate any problems that are cognitively complex.
3. At your table, discuss the following questions:
   • Where did you find these problems?
   • Compare the number of complex problems to the number of standard problems in your textbook.
   • How often do you assign these problems for homework?
   • How often do you include these problems in your section/chapter assessments?

Activity
SMI fully integrates the Statement on Competencies in Mathematics Expected of Entering College from the Intersegmental Committee of the Academic Senates of the California Community Colleges, the California State University, and the University of California (ICAS)

... the 2010 Statement on Competencies in Mathematics Expected of Entering College Students ... is the result of a remarkable collaboration among secondary mathematics teachers and college and university faculty. It has benefited from many comments and suggestions from people throughout California who responded to the review. It updates and replaces the previous competency statement produced in 1997. The document provides a clear statement of expectations that faculty have for the mathematical ability of students entering college in order to be successful (from the letter of introduction).

Design of SMI Workshops

Key features of SMI design:

- Bring together an entire mathematic department and/or a critical mass of teachers within a district to plan the systemic implementation of the instructional strategies contained within the SMI modules.

- Provide time in between each module to enable teachers to work together to
  - implement SMI strategies into their classroom instruction
  - discuss and evaluate the efficacy of those efforts

- Provide regular, on-site mini-workshops over an extended period to support on-going and sustainable changes in teacher behaviors and expectations.
Characteristics of the Workshop

- 18-24 hours of professional development; 8 modules to allow for flexibility in scheduling
- Standards based and tied to the CSTs and CSU placement standards
- Includes content and activities for teachers of Algebra 1, Geometry, Algebra 2, Pre-Calculus
- Draws on problems and lessons from the major textbooks
- Designed for teacher practice and implementation between workshop sessions based on lesson study model
- Reflective of the adopted Common Core Standards:
The SMI Workshop Series consists of 8 modules and an online tutorial

- The online tutorial must be completed prior to the first workshop meeting.
- Welcome, Setting the Stage, Deconstructing, and Integrating modules must be done first and in the specified order.
- Order of the remaining modules may be adjusted in consultation with the participants/site/district.
- At the discretion of the EAP Mathematics Professional Development Committee, a workshop series may cover fewer modules according to the special circumstances of the site and/or district.
One high school mathematics department with approximately 16 to 20 teachers.

- Workshop series held at school site
- First day (4 hours) scheduled on pupil-free day
- Subsequent 1.5 hrs mini-workshops to be held once a month during department meetings on late-start days
SMI Evaluation

- The evaluations continue to come in very positive. The workshops appear to be well received and math teachers appreciate having high level math professional development.
1. The Instructional strategies to help improve student learning
2. How to approach common errors in a teachable way. Looking for the underlying structure
3. Focus on “why” of student misconceptions
4. Getting rid of roadblocks-error analysis
5. Looking for common errors
6. For me, underline structure and school/For student: the common errors discussed
7. Using layering techniques to engage student learning
What teachers would like more of:

1. More instructional strategies
2. More time to write the problems
3. More work time to build cognitively complex problems for ourselves
4. Develop units particular to Algebra I, Geometry, Algebra II or a particular topic, like factoring or quadratics
5. A supply of problems
6. Common core standards
7. Assessment/CFU
What teachers are taking back to the classroom from SMI:

1. Layering
2. Reminded of Frayer take time to education students on why of errors
3. Paring down of overly cognitive problems to allow student success
4. Layering and using underlying problem structure throughout the curriculum
5. Using more non-examples
6. Layering
7. Using problems already in textbook, Frayer, non-examples
12th Grade Course

1. We are in the process of developing a 12th grade course for high school adoption.
2. The course will meet the C requirement from UCOP and will give high schools an option that is not “repeat” Algebra 2 or pre-calc/trig
3. The course will satisfy the Math “conditional” on the EAP
Features of the Course

- Aligned with the Common Core Standards
- A focus on cognitively complex problems
- High use of technology and web based learning
- Strong focus on ‘college readiness’ for all students
- An alternative to pre-calculus/trig
- Algebra II a pre-requisite