Interim Report
to the
S. D. Bechtel, Jr. Foundation

Part IV—Section II:
Preparing a New Generation of Educators for California
Targeted Grant Reports

December 2015

Office of the Chancellor
California State University
Teacher Education and Public School Programs
Appendix I

California State University
Bakersfield

Targeted Project
Preparing a New Generation of Educators for California  
Campus Grant Interim Report Template  
Due Date: November 2, 2015

Please single space and use 12-point Arial Narrow font. Save your report as “Interim Report NGEI Campus Name” and email to ryopp@fullerton.edu by 5:00 p.m. Please include any attachments related to the project that you would like to have included in your Report.

| Campus Name: CSU-Bakersfield  
| Project Contact(s): Jesus Esquibel, Bree Gage  
| Contact Information: (661) 654-3908, jesquibel@csub.edu |

1. Brief summary of the project and its goals *(Comprehensive Projects should include attention to the Required Features in the RFP and on the initiative website at: teachingcommons.cdl.edu/CSUNewGen/new_gen_grants. Targeted Projects should include attention to advancing the new standards and K-12 partnerships.)* (1/2 - 1 page)

CSUB proposed an innovative approach to preparing a new generation of teachers to implement effective teaching strategies that focus on crosscutting elements of practice, habits of mind, academic discourse and 21st Century skills to motivate students for future STEM careers. Through clinical experiences and the addition of a new STEM (FabLab) undergraduate lab course, candidates will have the ability to develop and teach high quality lessons that go beyond the standards and incorporate the engineering design process, computing and technology. Through meaningful collaboration, the Teacher Education Department (TED) will coordinate these efforts with the School of Natural Sciences, Mathematics & Engineering (NSME) and district partners.

With committed district partners and interdisciplinary faculty, CSUB will develop and pilot an undergraduate STEM (FabLab) course and expand and enhance the STEM field experience Camp BLAST. The primary focus of these reforms will include the CCSS-N and NGSS through computing and engineering. For Camp BLAST lesson plan examples, observations and photos, please visit the Bechtel Camp BLAST Folder at: https://drive.google.com/folderview?id=0BwAWJE42Tm1cfnEOVWZOThsBbJzuvFla3RNVDhtY2JDcm6bDijOJYVYll3NGMzbXNzdUE&usp=sharing

2. Description of key activities and strategies accomplished against the timeline, including any partner contributions *(This may be based on implementation milestones on your Tracking Your Progress form.)* (1-2 pages)

CSUB has partnered with three rural districts to revise and expand Camp BLAST. BLAST serves as a hands-on STEM field experience for future teachers and exposes students in grades 4-8 to the engineering design process and computing through project-based lessons, exploring a variety of scientific topics. **Objective:** 60 undergraduate students and 60 pre-service teachers will be paired to co-teach in the STEM field experience Camp BLAST. All pairs will have the opportunity to develop and co-teach over 50 hours of hands-on STEM lessons. Prior to Camp BLAST all pairs will complete 40 hours of professional development. All co-teaching pairs worked in the classroom for approximately 3.5-4 hour days Monday through Thursday, for 4 weeks, which is approximately 50 hours of STEM lessons taught. The 40 hours of professional development was given in the weeks prior to the Camp BLAST; 8 hour days for 5 Saturdays. In addition to the 40 hours of professional development on Saturdays, co-teaching pairs met daily as a follow up to each camp instructional day. During these
debriefings co-teaching pairs reviewed lesson plans strategies, management issues, and opportunities to use additional co-teaching strategies.

Camp BLAST is a STEM based four-week summer program supported by an interdisciplinary group of faculty, which has served over 500 3rd-8th grade students from three rural districts. Funding from TQP provided additional support for development of computing and engineering modules by TQP Residents and CSUB faculty. By the end of year one, 19 residents, 16 MSTI and undergrad students, and 7 district teachers were trained for Camp BLAST. These numbers can be used as the baseline projection for Camp BLAST 2016. Which will be approximately the same number for undergrad and district teachers, but with the addition of our next round of TQP residents, there will be an additional 30 residents to be included.

TQP residents were paired with undergraduate students from the MSTI, Mini-Corps and NOYCE Scholars program. Another unique feature of this project was access to the new Fab Lab on CSUB’s campus. Co-teaching pairs were trained to create lessons that incorporate modeling, EDP, and digital fabrication. Students from Camp BLAST also had an opportunity to visit CSUB’s campus to design and create a product in the FabLab. Outcome: Participants have increased confidence teaching computing and engineering CCSS-M and NGSS lessons and activities. Outcome: BLAST co-teaching pairs have demonstrated an increased proficiency in developing and implementing lessons that included computing and engineering in a hands-on project-based environment guided by NGSS and CCSS-M. Evaluation: The PI and NSME faculty led evaluation including Formative and summative included a pre & post survey at the end of the camp. A line-by-line item analysis has shown a statistically significant increase in all participants’ confidence in teaching STEM. Faculty mentors evaluated undergraduate and pre-service participants using a newly developed observation protocol aligned with best practices for project-based learning. Formative assessment included observations of STEM based lessons. Areas of improvement were identified and reviewed with participants in a post lesson briefing. Summative assessments were a final observation of participants' delivery of STEM project-based lessons.

3. Analysis of projected outcomes and impacts as compared to intended outcomes and impacts (You may use your Tracking Your Progress form to analyze your potential to meet your short term and long term projected outcomes.) (1/2 -1 page)

Each outcome and impact:

● Spring Quarter 2015 - Stage III credential students, along with PI developed and provided STEM curriculum with a focus on the Engineering Design Process with lessons including hands-on experiential learning. All Stage III credential students received hands-on experience with curriculum development and lesson planning. The curriculum used for camp based was a four-week curriculum with the Engineering Design Process interwoven throughout each unit. Stage III students helped create units for Vex Robots, Coding and Circuitry, Rockets, and Digital Art Design. The curriculum design team met for 8-hour days every week during the Spring 2015 quarter prior to Camp Blast starting.
• Administer Camp BLAST T-STEM pre & post survey data - First round of survey data has been administered and disaggregated. As proposed, teacher candidates did have a measurable growth in comfort with teaching about STEM related careers in their lessons. From the T-STEM survey, the data shows an increase of 25% from the shift of the “Agree” to “Strongly Agree” categories.

• Administer both Foundational and Pairs training to 20 co-teaching pairs. Pre-service candidates included students from a variety of programs: MSTI/NOYCE, Mini-Corp, and TQP. All co-teaching pairs were given the professional development in co-teaching strategies. From the observation data collected, teacher candidates were observed using these strategies in their own classes. Evidence of the use of co-teaching was measured during each observation. On a three-point scale from 1-3 (1 - co-teaching not evident, 2 - co-teaching someone evident, 3 - co-teaching clearly evident), there was an average score of 2.7 showing a strong presence of co-teaching in the Camp Blast classrooms.

• Faculty team (Teacher Education Department and Science Department) developed and implemented a classroom observation tool aligned with Teacher Performance Expectations (TPEs) and Co-Teaching competencies and strategies. Two classroom observations per pair during camp were done. In addition to the average score of 2.7 showing a strong presence of co-teaching in the Camp BLAST classrooms, the 6 teacher performance expectations that were highlighted as areas of focus for Camp Blast (Monitoring student learning during instruction, Student Engagement, Developmentally appropriate teaching practices, Teacher English Learners, Instructional Time, Social Environment) were observed in all classrooms. Below is data taken from the observations showing a combination of “observed” and “area of strength” for all six TPE’s documented in the observations.

- Monitoring student learning during instruction - 87%
- Student Engagement - 91%
- Developmentally appropriate teaching practices - 89%
- Teacher English Learners - 56%
- Instructional Time - 96%
- Social Environment - 94%

Additionally, pre-service and undergrad students were observed taking initiative in the classroom with lesson plans. Many teachers actively sought additional teaching manipulatives and curriculum to integrate into their lessons. This has been observed as exhibiting an increased comfort and understanding of STEM based lessons, with respect to their level of understanding that teacher candidates have with these STEM lessons.

4. Summary of formative evaluation results, including evaluation instruments and metrics (Attach any available data and copies of instruments.) (1/2 -1 page)

   See attached report below.

5. Explanation of major risks/challenges inhibiting implementation of key activities and strategies undertaken to mitigate them (Your Tracking Your Progress form may be helpful.) (1/2 -1 page)
The one-unit course, to be developed, will only allow one hour per week of class time. This will be a short amount of time to teach problem-based learning experiences and still allow for instructional time in the Fablab. One possible idea to mitigate this issue would be to potentially meet every other week for a two-hour time block and/or offer open lab hours for student learning experiences in the Fablab twice a week. Currently there are open lab hours in the Fablab for three hours every Wednesday, but when this one-unit course begins in the Spring, the Fablab director has agreed to allow additional lab hours on Fridays.

Additionally, the culminating week of Camp BLAST ended with over 70 students getting to tour and create something using the Fablab machines. This interactive tour was very engaging for the elementary students but extra required time and space that was not considered initially. The Fablab can hold about 15 students at one time and any machine used there takes about 30 minutes to teach how to use and an extra 30 minutes of operational time to create a final product students can have in their hands. Due to the restrictions of time and space only 8th grade students were chosen to visit the lab. In the following years, the proposed plan will be to have Fablab equipment available in other locations to give more student access to these tools.

#4. Summary of formative evaluation results, including evaluation instruments and metrics

**Camp BLAST!**

During the summer Camp BLAST of 2015 pre-service teachers (MSTI, GRO STEM Residence (I), GRO STEM Residence (II), and Early Field Experience Students) were observed with multiple focus areas. The areas of focus were based on the Teacher Performance Expectations. A total of 34 hours were observed by Teacher Education and Science faculty from the University, along with the LEA mentors. Approximately 34 hours of observations were recorded throughout the four-week span of Camp BLAST. Co-teaching and the focus areas were observed and follow up conferences with the pre-service teachers were held.

All lessons were co-taught. Co-teaching pairs participated in four hours of co-teaching/pairs training prior to the beginning of camp. There are seven co-teaching strategies that were trained on: One Teach/One Assist, Parallel Teaching, Alternative Teaching, Supplemental Teaching, Station Teaching, Team Teaching. Of the seven strategies, three showed prominence during Camp BLAST: One Teach/One Assist, Station Teaching, Team Teaching. Co-teaching was measured on a 3 point scale, indicators included 1-not evident, 2-somewhat evident, 3-very evident. The areas measured were based on obtainable Teacher Performance Expectations:

- Monitoring student learning during instruction
- Student Engagement
- Developmentally appropriate teaching practices
- Teaching English Learners
- Instructional Time
- Social Environment

<table>
<thead>
<tr>
<th>Monitoring Student Learning</th>
<th>Student Engagement</th>
<th>Developmentally Appropriate Teaching Strategies</th>
<th>Teaching English Language Learners</th>
<th>Instructional Time</th>
<th>Social Environment</th>
</tr>
</thead>
</table>
Areas of strength, by evidence of classroom observations, included Teacher Performance Expectation 2 (monitoring student learning during instruction) and Teacher Performance Expectation 11 (social environment).

**Supporting evidence for TPE 2:**

“Exit Ticket utilized to check for understanding”

“Checking for understanding done throughout the lesson. Kim checks for understanding during directions. This gives students a chance to demonstrate understanding, but also hear the directions again...”

“All student discussion is related to learning target. The teacher demonstrates responsiveness, taking the time to assess and quantify student understanding, and then adjusting his questioning and pacing.”

“As teachers circulate they ask students ‘What is this?’ ‘What does it do?’ and other questions as they help the students debug their programs.”

“T was observed monitoring each of the stations he was assigned to...asked the group questions that allowed students to advance at their station objective.”

**Supporting evidence for TPE 11:**

“Austen, I really enjoy watching your interaction with the students. A smile goes a long way. Smiling, laughing, and joking with the kids is a great way to build relationships with them.”

“Group roles are a great way to give kids responsibility and accountability within the group.”

“Kim is greeting the kids at the door with “How was lunch?” and preparing them for the expectation for when they enter the classroom.”

“Jacob - ‘Welcome back kids, it’s great to be back’.

“T had maintained a good group setting where students worked collaboratively on the activity”

“While they do not have assigned roles within their groups, students readily negotiate duties to accomplish tasks, e.g. obtaining materials and sharing and assisting one another with laptops.”
“Working in small groups, all discussion were positive. When students cannot recall or don’t know an answer they say so. There does not seem to be any anxiety when conveying that they are unsure of an answer.

**Co-teaching**

Out of the strategies students were trained on, three co-teaching strategies were implemented: One Teach/One Assist, Station Teaching, and Team Teaching. With the majority of lessons being taught using One Teach/One Assist. Parallel Teaching, Alternative and Supplemental Teaching were not observed during Camp Blast.

<table>
<thead>
<tr>
<th>Observed Co-Teaching Strategies</th>
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</thead>
<tbody>
<tr>
<td>One Teach/One Assist</td>
</tr>
<tr>
<td>Parallel Teaching</td>
</tr>
<tr>
<td>Station Teaching</td>
</tr>
<tr>
<td>Alternative Teaching</td>
</tr>
<tr>
<td>Supplemental Teaching</td>
</tr>
<tr>
<td>Team Teaching</td>
</tr>
</tbody>
</table>

Evidence of the use of co-teaching was measured during each observation. On a three-point scale from 1-3 (1 - co-teaching not evident, 2 - co-teaching someone evident, 3 - co-teaching clearly evident), there was an average score of 2.7 showing a strong presence of co-teaching in the Camp Blast classrooms. This is reflected in quotes from the observations, as well:

“Cecil led the class while Mark circulated around to monitor/help students and assist.”

“Mr. Starr clearly led the lesson while his co-teacher assisted students’ collaborative work.”

“Both teachers had a role in this lesson that was planned out and clearly evident.”

“Team Teaching was evident. Krystal led the first half of the lesson and Kim took the closure. Both teachers worked with groups of students throughout the lesson.”
Teacher Efficacy and Attitudes Toward T-STEM

Efficacy and Attitudes of teacher candidates were measured before and after participation in Camp BLAST using the T-STEM Survey. The survey showed an increase in technology as an instructional tool in the classroom. The data below shows an increase in awareness of how technology is being used as an instructional tool in the classroom.

The T-STEM survey data also shows an increase in awareness about STEM careers after participation in Camp BLAST. From the four questions regarding awareness in STEM careers there was an average increase of 23% in all four of the “Strongly Agree” categories.
Appendix I-1

Week 1 Day 1 Circuitry Presentation
It’s Your Future

Day 1
June 22, 2015

Introduction to S.T.E.M.

Embedded video - STEM Motivational Video.mp4

What is STEM?

Engineering Design Process

Define the challenge and its limitations.

Plan and Create
What is Science?
Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena.

What is Technology?
The specific methods, materials, and devices used to solve practical problems.

What is Engineering?
- Using practical & scientific knowledge to create solutions for identified problems.
- Engineers use math/science to create most of the products, buildings and structures we see every day.

What is Math?
The study of the measurement, relationships, and properties of quantities and sets, using numbers and symbols.
Appendix I-2

Circuitry Day 2 Agenda
Circuitry Day 2

8:15 - 8:45
Welcome/Attendance (Send runner to the office)
Practice/review classroom expectations/procedures
Continue and finish Mission Statement
  a. collect and report out the common thread(s) in terms of learning and the future.
  b. In their collaborative groups, utilize Think-Write-Pair-Share (TWPS), challenging them to “say it in a sentence,” and then select one statement for the group.
  c. Finally, utilize the anonymous vote to select the statement for the class

8:45 - 9:15
Review Circuitry Day 1 Lesson
Have students form circle again in groups and explain open and closed circuits.
Students also explain transfer of energy and power source

9:15 - 11:00
Introduce Scratch Programming
  ● Have students go to scratch website and create user id
  ● Allow students time to play around with program
  ● Students can work through tutorials to familiarize themselves with the program

11:00 - 1:00
Introduction to Makey Makey
  ● Show students video on Makey Makey (3 minutes)
  ● Explain how we are going to use Makey Makey (activities)

  Pencil Keyboard Activity
  ● Use PowerPoint
  ● Have students draw/create their pencil keyboard
  ● Have students test/play their keyboard using the Makey/Makey

  Whack A Mole Activity
  ● PowerPoint

  Magnetic Maze Activity
  ● PowerPoint

Closure 12:50 - 1:00
  ● Remind students to bring SOCKS TOMORROW for Mini obstacle course activity
  ● Cleanup/Dismissal
Appendix I-3

MaKey MaKey Activity
Reference Guide
MaKey MaKey Activity Reference Guide

Pencil Keyboard: This activity will serve as an introduction to the Makey Makey software for students. Students will be guided through an introduction of the Makey Makey via a website. They will connect the Makey Makey to a computer/laptop and use this activity as an introduction to capabilities of the Makey Makey. Students will draw a keyboard with 5 Keys. They will use a pre-designed keyboard that was made especially for use with the Makey Makey. Students will use this pre-designed keyboard as a guide to draw their own keyboard with pencil and paper. This pre-designed keyboard already has sounds built into it so students will not have to program these sounds, they can focus on learning about the Makey Makey. After students have drawn their keyboards they will use the alligator clips from the makey makey kit to connect their keyboard to the Makey Makey. Students will test out their keyboards and attempt to create their own music/songs in groups. Students will experience the process of setting up the Makey Makey and may need guidance in this area. There is a website with how to instructions and the pre-designed keyboard linked into the lesson activity.

Magnetic Maze: Students will create a maze made of play-doh and use a set of magnets as their player. After the time starts, if the magnet touches the maze wall time will get added to the score. Since play-doh is conductive, the MaKey MaKey alligator clips will be connected to the end of the maze and the magnets will be connected to copper wire, which will be connected to another alligator clip. Each of these alligator clips will connect to the MaKey MaKey, and the MaKey MaKey will be connected to the computer, which will run the scratch program. The scratch program will act as the game-keeping score and keeping track of how many times the player runs into the wall.

Whack a Mole: Students will complete a circuit using Play-doh and a MaKey MaKey that can be used as a game controller for Whack a Mole Scratch game. Students will create the program for the Whack a Mole game in Scratch. After creating the game students will test their program by making three balls of play doh and connecting the MaKey MaKey to the play doh and the computer.

Mini Obstacle Course: Students will sketch and construct an obstacle course using conductive material, like foil, that will challenge students’ agility as well as their understanding of circuitry. Once each obstacle course is created on the floor and tested with the MaKey MaKey and Scratch, the students will switch and try out another group’s obstacle course.

PacMan: Students will take a PacMan program and analyze the script within the game on Scratch. Then students will create their own controls using paper and pencil graphite. After they create their controls they will connect it to the MaKey MaKey and test their controls. Once the controls work effectively the students will create their own sprite within the game and play the PacMan game.

Celery Piano: Students will design and build a piano using a MaKey MaKey kit in which the keys of the piano are sticks of celery. Students will use 7 sticks of celery to represent 7 keys on
a piano, these will be connected to a MaKey MaKey through alligator clips and then connected to a computer.

**Interactive Board Game:** Students will build a board game using provided resources like paper, pencils, cardboard, foil, markers, scissors, binder clips, and picture paper. Students will then make the board game interactive by using programming methods.

**Mike Tyson’s Punch Out:** Students will design and construct an original nintendo controller using makey makey software that can be used to play Mike Tyson’s Punchout video game on a computer. The goal of this activity is to allow students to use their knowledge of the Makey Makey kit and circuitry to create interactive controllers to a video game. Students will have to use the EDP to construct their interactive controllers. They will have to design the interactive controls themselves, teachers will not show them how to do this. This will be a trial and error process. Students will demonstrate their knowledge of circuitry and engineering during this process.
Appendix I-4

Pencil Keyboard Instructions
Pencil Keyboard
(Intro to Makey Makey)
(1 hour)

**Objective**
To design a keyboard out of pencil drawings using the makey makey/scratch programs.

**4th/ 8th grade:**
Your mission is to create a Pencil Keyboard using a piece of paper, pencil (graphite) and the makey makey kit. Your design constraints are:

1. Must use only provided materials
2. Your Pencil Keyboard will consist of 5 sounds/keys
3. Be Creative (Design your own song/beat/music)
4. Use Scratch Programming to Create keyboard sounds
   [https://scratch.mit.edu/projects/2543877/](https://scratch.mit.edu/projects/2543877/)

**Materials**
1. Paper
2. Pencil
3. Makey Makey kit
4. Makey Makey Getting Started PowerPoint
   [https://docs.google.com/presentation/d/1ymMDou36A0TS1KuzGF9qrrff5pltA5L9uOJhSF7oOOs/edit#slide=id.p8](https://docs.google.com/presentation/d/1ymMDou36A0TS1KuzGF9qrrff5pltA5L9uOJhSF7oOOs/edit#slide=id.p8)
5. Chromebooks/labtops

**Introduction and Background**
What is Pencil Keyboard?
Students will use the Makey Makey kit to create a Pencil Keyboard out of pencil drawings. Students will have learned from previous lessons basic circuitry skills. Students are going to apply these skills to create their pencil keyboard. The purpose of this lesson is to provide students with a fun way of learning about circuitry as well as demonstrating the
skills they have learned from previous circuitry lessons. This will also serve as an introduction to the Makey Makey Kit and Scratch Programming. Students will use a piece of paper and create dark pencil markings when drawing their Pencil Keyboard. The graphite from the pencil will conduct the circuitry that will be connected through a makey makey kit to a computer. Students will be able to create a keyboard out of pencil by connecting the makey makey kit to their computer. After students have connected the makey makey to their pencil keyboard they will have ten minutes to experience the Makey Makey software and create a song/beat within their groups. After each group demonstrates their songs the teacher can review how the Makey Makey was an example of circuitry with the students. You will need to lead them through the PowerPoint steps to set up the Makey Makey. Have students use this website [http://makeymakey.com/piano/] to draw their keyboard and connect their Makey Makey. We will use the pencil drawings to demonstrate circuitry and as an intro to the Makey Makey Software and Scratch Programming.

**Methods:**

1. Share the *Design Challenge* with the students.
2. Hand out the materials to the students and challenge them to build their own Pencil Keyboards using the Powerpoint as a guide. Guide them through this process.
3. Provide students with directions to using makey makey kit to use as a resource (PowerPoint)
4. Remember students will be doing this one step at a time as you guide them through the powerpoint. They will first create one keyboard key and connect it to the Makey Makey. They will then use scratch programming to create the rest of their keyboard sounds
5. Remind students to create an idea for their song/beat using their pencil keyboards by brainstorming together in groups.
6. Have students test out their pencil keyboards (10 minutes)
7. Remember: Students may need guidance connecting the Makey Makey to their keyboard. Walk around the room providing assistance as needed.

**Creating the Pencil Keyboard**
● Draw the pencil keyboard using a pencil and paper. These pencil shavings need to connect to the edge of the paper for conductivity.

● Take out the Makey Makey kit and connect each keyboard key to the Makey Makey and the computer.

● After students have had time to construct their pencil keyboard and test it out give them additional times to create a song/beat/music as a group to play for the class.

● Each group should create at least a 15-20 second song/beat (musical piece) to share with the class.

**Steps for Creating Pencil Keyboard (Teacher)**

1. Begin by distributing a piece of paper to all students.
2. Students use pencils to draw conductive lines to keyboard keys

3. Each key will have a different sound (Use Makey Makey Keyboard website http://makeymakey.com/piano/)

4. Students will connect makey makey circuit to each conductive line.

5. Tip: Make sure pencil lines are **DARK**
6. Students use Scratch Program to create 5 keyboard sounds
7. Students test out your pencil keyboard via website http://makeymakey.com/piano/ 
   (make corrections if needed)
8. Play your newly created keyboard
9. Create a musical piece (song/beat/melody) within your group (15-20) seconds to share 
   with the class

Extension:
Create your own keyboard sounds using this Scratch Program. 
http://scratch.mit.edu/projects/ericr/2543877
Appendix I-5

BLAST Flyer
Available for grades 4-8

JUNE 15TH - JULY 9TH

CSUB Launching Adventures in STEM Thinking!
Science, Technology, Engineering, and Mathematics (STEM) are critical components of any child's education. The BLAST program was created to serve the city of Lamont, its school district, and most importantly its students.

Weekly STEM Themes:
- Gadgets and Gizmos
- Radical Reactions
- Rise of the Robots
- Shape Shifters

Location:

June 15th - July 2nd
Monday Thursday
Alicante Ave. School
7998 Alicante Ave
Lamont, CA 93241
8am 1pm

July 6th - 9th
Monday Thursday
CSUBakersfield

Buses will depart from Alicante at
8am and return by 2:30pm

ANY QUESTIONS,
CONTACT:

Tom Board
Wrk: 661 654 2458
Cell: 661 472 7162

Robin Valente
Wrk: 661 654 2458
rvalente@csub.edu

Come have a BLAST!
Build a robot!
Appendix I-6

BLAST Teacher Observation
California State University, Bakersfield  
Teacher Candidate Observation Form  

Co-Teacher(s): Bridgette Duval and Mitra Aguilar  
School: Alicante  
Observer: J. Esquibel  
Visit #: 1  
Grade: 4th  
Time: 10:00  
Date: 6/25/15

Code each TPE as follows: X not observed; O observed; S area of strength; N area of need; G growth demonstrated

Teaching Performance Expectations

<table>
<thead>
<tr>
<th>TPE #</th>
<th>Description</th>
<th>O</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Subject-specific pedagogical skills</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Monitoring student learning during instruction</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Interpretation &amp; use of assessments</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Making content accessible</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Student engagement</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Developmentally appropriate teaching practices</td>
<td>O</td>
<td></td>
</tr>
</tbody>
</table>

Observation Report

TPE #2: T moved around the room to monitor student learning.

TPE #5: This activity seemed like a really fun activity and students were all engaged in this project.

TPE #6: "antler ears" to get them to stop working and give attention.

TPE #7: How were you able to get the kids to read, write, speak, and listen today in this lesson?

TPE #10 & #11: T had maintained a good group setting where S's worked collaboratively on the activity.

Comments and Suggestions

All students were actively engaged in this activity. Some group norms when working with these types of activities should be written on board or posted. Things like: Stay in seats, ask partners then raise hand for help, etc. Your students were well behaved, but use this opportunity to practice good classroom norms and procedures.

T did a good job of walking around and checking for all S's engagement in the activity.

Observed T using good procedures for attention getting and dismissing from the room (group by group to monitor behavior).

As you are walking around room, try asking questions to the S's about what they are doing and what it is they are learning. Also, is there an opportunity in this lesson to have the kids to a journal write? Because this is such an engaging activity, this could be used to help get them writing and reading. Talk with your partner on ways you could implement a journal.

Used positive praise when possible, teacher addressed student behavior concerns in quiet one on one fashion that did not draw attention to discussion.

Co-Teaching Strategy Used  | Evidence of Use  | Comment |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Teaching</td>
<td>Clearly Evident (3)</td>
<td>Both teachers had a role in this lesson that was planned out and clearly evident.</td>
</tr>
</tbody>
</table>

Summary: I was happy to see a well run/managed class with obvious sign of procedure and norms. Continue to reinforce these norms on a daily basis so that there is no mistaking what is expected of the students. Typically during a debriefing I will go over things that I see and add additional information that I might find relevant for our discussion. This does not mean that you did something wrong, I just like letting you know extra strategies that can be applied in the classroom. I hope that was how you understood our conversation.
California State University, Bakersfield
Teacher Candidate Observation Form

Co-Teacher(s): Nikki Cabral/Kayla Calciano     School: Alicante
Observer: Bree Gage Visit #: 1     Grade: 5th     Time: 8:15     Date: 6/29/15

Code each TPE as follows: X not observed; O observed; S area of strength; N area of need; G growth demonstrated

Teaching Performance Expectations

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<tr>
<th>TPE</th>
<th>Code</th>
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</thead>
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<tr>
<td>1. Subject-specific pedagogical skills</td>
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<td></td>
</tr>
<tr>
<td>2. Monitoring student learning during instruction</td>
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<td></td>
</tr>
<tr>
<td>3. Interpretation &amp; use of assessments</td>
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<td></td>
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<tr>
<td>4. Making content accessible</td>
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<tr>
<td>5. Student engagement</td>
<td>O</td>
<td></td>
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<tr>
<td>6. Developmentally appropriate teaching practices</td>
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</tbody>
</table>

Observation Report

Upon entrance of the classroom students are seated in groups and engaged in seatwork.

Students working on a nonlinguistic representation of "What an engineer is..."

Both teachers are walking around the room

Checking for understanding is done by calling on students who raise their hands

Prior knowledge (last week) is built upon and connected to

Students are encouraged to answer in complete sentences

Nikki leads while Kayla supports by recording student answers

Student share and discuss about Mechanical Engineering

Co-Teaching Strategy Used

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Evidence of Use</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Teach / One Assist</td>
<td>Somewhat Evident (2)</td>
<td>Kayla did a good job of recording and circulating, but could be more involved with the students and giving them feedback. Nikki was the primary instructor in the lesson.</td>
</tr>
</tbody>
</table>

Summary: Overall, the class was very well managed. A few times students blurted out and were redirected. Both teachers stayed within close proximity of students. Nikki made sure all students answered when they responded chorally. There were a variety of response types, but needs to be more frequent. Involve all students more. Content is being taught at an appropriate rate.
Appendix J

California State University
Chico

Targeted Project
1. Brief summary of the project and its goals (Comprehensive Projects should include attention to the Required Features in the RFP and on the initiative website at: teachingcommons.cdl.edu/CSUNewGen/new_gen_grants. Targeted Projects should include attention to advancing the new standards and K-12 partnerships.) (1/2 - 1 page)

The Primary goal of the Triad Project is to simultaneously increase the professional development of science teachers, science teacher candidates, and university science educators around the NGSS. The Triad PD teams consist of one university specialist, one teacher candidate, and one cooperating teacher. The Triads are working collaboratively over a semester to design, implement, reflect upon, revise and submit a field-tested integrated instructional NGSS unit. The units are designed using a template created at CSU Chico. Each NGSS unit includes the following: 1) all three dimensions of one or more CA NGSS standard(s), 2) connections to CCSS ELA/Literacy, CCSS Math, and/or ELD standards, 3) an innovative overall approach appropriate for the chosen standard (e.g., model-based instruction, argumentation, 5-E model, place-based education), 4) a variety of instructional strategies to meet the needs of all learners, including students with special needs and emergent bilinguals, and 5) both formative and summative assessments as integral aspects of instruction. Summative assessments are “blended” in order to assess student performance in all three dimensions of the NGSS.

At the end of each semester, the triads will meet during a workshop to share experiences, challenges, successes, effective practices and unit designs. The fall workshop will take place on December 9, 2015. All science teachers from all districts represented in the triads will be invited to attend the workshop. By involving all districts represented in the triads, the workshops will foster inter-district teacher collaborations. Identified Triad PD pairs for the following semester are also invited to attend. To encourage resource sharing both within and across districts, the field-tested units will be uploaded to the CSU Chico School of Education website to be accessible to any teacher or educator providing much needed curricular materials aligned with the NGSS. Lastly, participating cooperating teachers will conduct PD sessions at their own school sites during subsequent semesters positioning them as teacher-driven reform leaders in their own districts.

2. Description of key activities and strategies accomplished against the timeline, including any partner contributions (This may be based on implementation milestones on your Tracking Your Progress form.) (1-2 pages)

Co-PIs visited school sites, met with potential cooperating teachers and teacher candidates, described the Triad Project, and solicited participation of Triad PD Teams. As a
result, six Triad teams began work in August 2015. Each Triad has met several times this semester and many of the projects are nearing completion of the planning portion of the process. In addition, each science educator has met with each teacher candidate individually to help plan the unit and address any questions or concerns. Additionally, the science educators have met on thee occasions during the semester to share progress, address concerns, define responsibilities, and delegate tasks. Each team is using the NGSS Planning Tool created here at CSU Chico which will serve as a template for the final units that will be uploaded to our website. One Triad unit’s instruction began on October 26. The other five teams will begin instruction in November.

Human Subjects Proposal submitted and approved for data collection in Fall 2015 and Spring 2016. Data collection tools for project evaluation have been completed including participant surveys, focus group interview protocols, and the NGSS Unit Rubric (based upon the EQUIP Rubric) that will be used to measure the quality of the units. These tools will be administered in December.

Planning for the final semester Triad workshop is well under way. We have reserved a room and created an invitation and an on-line registration system. The science educators created a mailing list of 125 potential participants, mostly science teachers from a number of school districts in the Chico area. The invitations were sent on Friday, October 30.

Lastly, the website design for the Triad Project has begun. Co-PI, Dr. Tal Slemrod, has met with a website developer. The website will be searchable by keyword and NGSS and ready for uploading the completed Triad units and additional documents in time for the December workshop.

3. Analysis of projected outcomes and impacts as compared to intended outcomes and impacts (You may use your Tracking Your Progress form to analyze your potential to meet your short term and long term projected outcomes.) (1/2 -1 page)

Our first measurable outcome has been met: the formation of the six Triad teams. As noted above, we have also met another outcome by completing the submission and approval process for Human Subjects. As a result, all data collection tools for project evaluation have been completed and approved. The data collection will take place after the December 9 workshop. That way, all participants will have experienced the entire Triad process of unit planning, design, implementation, reflection and presentation before providing their feedback on the effects of the TRIAD process on their professional development. We are on track to meet all other outcomes, including the completion of the six units. Further, the December workshop and the Triad website are both on schedule for completion. We currently have 36 attendees signed up for the workshop. Go here to see our current registration list that includes science teachers, administrators, professors, science teacher candidates, and more from around CSU Chico’s extensive service area. The invitation to the event is in the Appendix. One measurable outcome has not yet been met: the establishment of the six Triad teams for the Spring semester. The introductory email has been sent to six potential CTs, which equals the number of Practicum II science candidates for spring.

3. All science educators have reported that each Triad has made significant progress on their units (see one concern below in the Challenges section). Since the Triad Units are currently being taught and are under construction, we have included descriptions of each of the units in an attachment in Section 5 below: Additional Significant Information.
4. Summary of formative evaluation results, including evaluation instruments and metrics (Attach any available data and copies of instruments.) (1/2 -1 page)

The only data to report at this time are as follows:
1. Number of science candidates - 6
2. Number of science teachers - 6
3. Grade levels involved – 6-12
4. School districts involved – Chico Unified, Oroville Unified, Orland.
5. The number of science disciplines covered – Middle School Earth and Life Science, High School Biology, Physics, and Physical Science.

The remaining metrics are summative for each semester, the results of which will be reported in future reports. The metrics are as follows. First, the results of student performance on the summative assessments given in each NGSS unit will be collected and analyzed anonymously. Second, the quality of the NGSS units will be scored using a rubric designed in alignment with the NGSS Unit design template. Rubric scores will be collected and analyzed. Third, surveys will be completed by all parties involved: university science specialists, cooperating teachers, teacher candidates, and K-12 students. The survey data will be collected via Survey Monkey at https://www.surveymonkey.com/r/TriadPD and analyzed using quantitative methods. Fourth, each university science specialist will submit a brief report of the PD process analyzing its effectiveness. The reports will then be thematically analyzed by the PIs using qualitative methods. Lastly, the following data on each participant in attendance at the final workshop for each semester will be recorded: name, position, and organization. That way, we will know the number of administrators, science teachers, science teacher candidates (etc.), and organizations that our workshop has affected.

5. Explanation of major risks/challenges inhibiting implementation of key activities and strategies undertaken to mitigate them (Your Tracking Your Progress form may be helpful.) (1/2 -1 page)

We recently learned that Co-PI Dr. Leslie Atkins has taken a position at another university and will be leaving CSU Chico in January. As a result, we are searching for a new science educator to work on the project. If another science educator from the University cannot be found, Slemrod and Schademan will each take on either two three Triad teams for spring, depending upon how many teams are involved in the project. However, that will leave a budget shortfall, as three units of assigned time would not be utilized. In this case, we would need to request a budget revision.

PACT is a significant challenge to this project. Both research and professional experience has shown that the PACT takes a tremendous amount of time and effort on the part of teacher candidates, taking away from other teacher candidate responsibilities. Aligning PACT with the Triad Project is neither possible, not advisable, since the PACT is an individual assessment, and the Triad is a collaborative effort. To mitigate this problem, we have attempted to frontload the planning for the Triad Project units, and then give candidates time to complete their PACTs, and then have the students implement their Triad Project after PACT is complete. Unfortunately, we
have had to give some Triad teacher candidates extensions on their PACT due dates due to the inordinate amount of workload.

In one Triad, the teacher candidate is currently struggling with his student teaching and is currently on an Improvement Plan. That has proven to be a challenge for making progress with the Triad Unit. However, the Triad is making progress the rate of which will increase after the candidate submits his PACT. Looking forward, any Triad candidates for spring that have struggled in their Practicum 1 placements will need extra support from the Triad. Early identification of issues and frontloading the planning of the Triad unit will be vital for such teacher candidates.

6. Additional Significant Information

Additional information, as well as concrete outcomes and products constructed from the work of the Triad Project are forthcoming. As stated previously the Triad Units are currently under construction. When completed, the units will be uploaded to the Triad website which is currently under construction. However, we have included descriptions of the six Triad Units below. The authors of the units are listed in the following order: teacher candidate, cooperating teacher, and university science educator.

1. Pleasant Valley Physics Triad: Brad Hauskens, Tom George, and Dr. Leslie Atkins

This unit addresses the following NGSS performance expectation: HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. The overall structure to this unit is to have students learn core physical principles regarding force, work and energy as they model what happens in a multi-ball drop (e.g., https://www.youtube.com/watch?v=2UHS883_P60). In doing this, they first examine ideas of force and energy, with the goal of disambiguating these ideas, by examining simple machines; then they examine the various forms that energy might take, focusing on kinetic and gravitational potential; and, finally, they develop models for how something might bounce - describing both a mechanistic model for bouncing and the energy “story” of bouncing. These ideas are all tied together using model-based instruction, as the students create initial models of their understanding of the multi-ball drop, then revisit their initial models periodically throughout the unit to construct a model for a more complex case of stacked balls. See an example of a lesson from this unit called Disambiguating Force and Energy: Initial Steps in the Appendix.

2. Las Plumas High School Triad – 9-12 Grade Physical Science: Ken Dotson, Steve Coates, Dr. Leslie Atkins

This unit begins by introducing students to the puzzling phenomenon of the characteristics of elements; they are led to recognize that similarities between elements are not correlated with those elements with similar numbers of protons, but, instead, in a different pattern (e.g., element 10 has more in common with element 18 than it does element 9 or 11). The phenomenon is introduced to the students through a series of two innovative lessons called Developing the Periodic Table: Parts 1 & 2 (see the Appendix for complete lesson plans). We then use this to construct the basic structure of the periodic table. A series of online and student modeling investigations leads students to explain
this pattern by attending to the valence electrons. Finally, we develop models of bonding and students construct models of molecular bonds based on the valence electrons as captured by the periodic table. The unit addresses the following NGSS performance expectation: HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.

3. C. K. Price Middle School Triad – Sixth Grade Earth Science – Leslie Howes, Sonja Leland, Dr. Al Schademan

This unit is built around the guiding question: What is the most dangerous place to live in America? Now what sixth-grader would not want to know the answer to that question? The unit addresses the following NGSS performance expectation: MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. To meet this standard, each group of students is assigned one of nine natural disasters to research. Each group is provided with a table of questions to guide their research and a list of previously vetted Internet links and hard copy resources with which to conduct their research. The students will also map the locations of their natural disaster. After concluding their research, the students will present their findings to the rest of the class in a round robin format. Students will be given graphic organizers to support their recording of data about each natural disaster as they learn about each natural disaster from their peers. The students will then synthesize the data and determine the answer to the guiding question in the form of an evidence-based argument. They will need to make a claim about where they think the most dangerous place in America is to live, and support their claim with specific forms of evidence found in their research based on location, frequency and magnitude of natural disasters in a particular area.

4. Pleasant Valley High School Biology Triad – Chelsea Mitchell, Bill Flory, Dr. Al Schademan

This unit uses model-based instruction to explore a place-based phenomenon: How does a tiny sequoia seed grow into the General Sherman Giant Sequoia, one of the largest organisms on the planet? The goal of this unit is to help students understand the role of, and connections between, plant processes like photosynthesis and respiration, and the larger bio-geochemical cycles that take place in nature (i.e., the water and carbon cycle). The unit addresses the following NGSS performance expectation: HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. To begin the unit, students are taken outside. Using chalk, they sketch the diameter and circumference of the tree, and then hold hands around the circumference to see how many students can stand around the tree. Then, taking a 100-foot tape measure, the students measure the height of the tree out into the surrounding fields of the school. After realizing the immense size of this organism, they are presented with a tiny sequoia seed and with the guiding question for the unit above. The students draw their initial models, then during subsequent instruction about plant cell structure and processes, photosynthesis, respiration, and biogeochemical cycles, the student revisit their initial models periodically to add complexity. For two examples of student-generated models, see the document entitled Student Representations of the Micro and Macro Processes Involved in Plant Growth in the Appendix.
5. Bidwell Junior High Triad – Life Science – Lauren Duchon, Annie Adamian, Dr. Tal Slemrod

The sequence of lessons for this unit are for students to understand the content and systems that explain the scientific explanation of how environmental and genetic factors influence the growth of organisms. The unit addresses the following NGSS performance expectation: MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. The guiding question students will be posed to research and analyze is: What are the benefits and risks of genetically modified organisms and foods? Students will be engaged through an opening video explaining what GMO’s are, as students will then be presented with the overall question for the unit. Through activities, discussions, and research, lessons will then build towards the anchoring event of poster presentations on the environmental, genetic, and socioeconomic factors that determine both how GMO’s fit within both micro and macro systems. Based on students' understandings of these systems, students will explain and defend their answers to the original question of how GMO’s benefit or risk society – including their own lives.

6. Marsh Junior High Triad – Physical Science – Estefan Oliveras, Kelly Coombe, Dr. Tal Slemrod

The sequence of lessons in this unit is for students to understand the principals of energy through various systems within a Rube Goldberg machine. The unit addresses the following NGSS performance expectation: MS-PS3-5: Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. By discovering and analyzing the various systems within the machine, students plan, investigate, and analyze the science and engineering practices of designing the working model. Students will be engaged with the question and concept of energy in relation to mass and a moving object through the constructivist questioning of the workings of a pendulum ride (similar to what is found at an amusement park). Based off their original questions, students will use their initial curiosity to begin to build their own Rube Goldberg machine, while learning the systems of energy. The anchoring event is the demonstration of the constructed Rube Goldberg machines by applying the learned scientific ideas or principles to test their constructed system. Each student will construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to explain their Rube Goldberg machine model.
Appendix J-1

Triad Project:
Developing the Periodic Table
Developing the Periodic Table: Part I

NGSS Performance Expectations:

HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. [Clarification Statement: Examples of properties that could be predicted from patterns could include reactivity of metals, types of bonds formed, numbers of bonds formed, and reactions with oxygen.] [Assessment Boundary: Assessment is limited to main group elements. Assessment does not include quantitative understanding of ionization energy beyond relative trends.]

Background:
For many students, the periodic table is something that is a “given” — a map at the back of the textbook — and not the kind of thing that they could have developed. In this activity, we begin by having students reconstruct part of the periodic table by examining patterns in the characteristic properties of elements. We facilitate the construction by starting with a “template.” As students make decisions about where to place elements, they come to understand the role of columns and rows in the periodic table; they make choices about where to place the Noble gases, they have to determine whether mass or other characteristics should have more weight in determining the place of certain elements.

Our primary goals for this lesson are:
1. To familiarize students with the characteristic properties of elements.
2. For students to examine those characteristic properties to find patterns in the elements.
3. From those patterns, to construct an abbreviated periodic table, and understand the roles of rows and columns in this table.

Before beginning the lesson, it is ideal if students have some background in understanding the characteristic properties of matter. In particular, it is helpful if students understand what the...
information on the “element cards” means. As you see on the sample card, below, we expect students to know how to determine if a sample is a solid, liquid or gas at room temperature, how to determine density, melting point, boiling point, and conductivity. In our classes, we know how to determine an object’s mass, but have not yet discussed what is meant by “atomic mass.” In our setting (introductory college physics), we do a simple lab that shows reactions with HCl and CuCl₂ - so the reactions are somewhat familiar. This is not necessary, however. If desired, you could do a demonstration, show a video, or simply explain this section.

Getting started:
Organize students in groups of 4. Give each group the element cards Lithium, Beryllium, Boron and Magnesium, with one for each student in the group. Ask them first to silently write in their notebooks what they notice about their element, and to ask any questions about a characteristic they don’t understand. You might need to remind students about the Kelvin scale, for example, to explain that high numbers in “conductivity” mean that it is a good conductor of heat (W/mK), and “combining power” means that it likes to partner up in a ratio of 2 to 1 or 1 to 1, etc.

After students have looked over the cards and are familiar with what they are describing, ask each group to determine which two elements have the most in common and share their reasoning with the whole group. The goal of this activity is not to have a unanimous answer to that question, but for students to examine ways in which certain elements are similar and dissimilar from one another, and what they might attend to as they sort more cards.

As students work, circulate among groups to determine the kinds of considerations they are making: do similar “atomic masses” matter more than combining power? What about the appearance of the element? You may notice that all of your groups are claiming that Be and Mg are the most similar; in that case, be prepared to push back on how they reached that consensus — in what ways is Be more like Boron? On the other hand, your groups might have different conclusions. In this case, you should be prepared to help them articulate their rationales, underscoring that there is not a “right” answer, although there are stronger and weaker justifications.

Once you notice groups have selected their most-in-common elements, begin by asking for a show of hands, saying something like:
Okay - I heard a lot of great conversations. None of these elements is identical to the other; some are similar in some ways, but different in others. So there isn’t going to be a right answer here, but I want to know why you picked the pair that you did.

But first I just want to see where everyone is. So raise your hand if your group thought Lithium and Beryllium had the most in common. … what about … (ask for all the relevant combinations)

Juan, your group is the only one that thought Lithium and Beryllium were the most alike — and I loved what your group had to say about that. Can you explain to everyone what you all were thinking?…

Cristina, I see you shaking your head “no” — I know your group was considering that Lithium and Beryllium were similar but decided against that - can you share why?..

The goal of this conversation is for students to articulate clearly what they are looking for in determining similarity, and noting that it’s not entirely clear-cut. Ideally they will notice similarities that are then illustrated in the organization that follows.

Card sort:
Once students have articulated their ideas, hand out two more cards, Calcium and Strontium, to each group. Give them the following instructions:

Scientists have been interested in looking for patterns and similarities in the elements, and to help, they’ve sorted these cards into the following pattern (show an overhead, or hand out a sheet to students with the following):
Just like our groups (*perhaps!)*, they've put Lithium next to Beryllium; and also put Beryllium and Magnesium so that they are touching one another. I'm going to hand out to every group 27 more cards, and your job for the next half hour is to arrange those 27 cards around these 6 in a way that makes sense. You can't break up the T shape! - When you're done, check with me — and be prepared to explain how you decided to organize the cards.

Some tips for groups that are slow to start:

1. You might ask them to first just organize the cards in order of mass, from smallest to largest, and see where those fit with the “T.”
2. Alternatively, you could ask them to determine what card they think might fit in the "corner" between Li and Mg. — Or just put a card there and ask if they think it belongs. They should be able to determine (not immediately!) that they are looking for a metal with combining power of 1 that has a mass less than 9.
3. If time is an issue for some groups, simply finding cards to “surround” the T may be a reasonable expectation for groups that are not able to completely place the entire set of cards.

Some tips for groups that are quick to finish:

1. We often have groups finish relatively quickly, but rarely - if ever - is their table accurate. We often have groups that organize the elements into a somewhat large, “gapped” table. We ask them to determine if all “combining power 1” elements are the same group. (Some combine with Cl, some combine with H.) Suggest that these belong in different columns.
2. As about where H goes and why - should it stick off to the left or above?
3. Ask about where the Nobel Gases go and why — we often note that - like an “Ace” (which can be high or low value)— they could be at the left or the right of the table.
4. Ask them if the masses are all in order (there are two that are not!) — and why they chose to put those out of order.
5. Ask if they notice any “jumps” — Ca/Ga and Sr/In — and what that might mean.
6. There should be a “gap” in the table; the next activity asks students to determine what would go there, but you can start a particularly fast group on considering this gap if you need to keep them busy as other groups work.

Monitor groups; as they finish up, you can have them tape the cards down (if you don’t want to re-use those cards!) — or you can hand them a printed copy of this abbreviated Periodic Table.

Opening up discussion:
Once all groups are done, have them circulate to examine each other’s work and note any differences. If there are differences, ask students to identify and resolve those.

Assessment:
Students should have a “gap” in their tables where Germanium should be - we ask them to create an element card for the missing element. Typically this is a relatively informal assessment - students have an opportunity to work in groups and discuss what they think the characteristics should be. If you want a more fine-tuned diagnostic to determine how much each student understood about the patterns, you could ask each one to take 5 minutes on their own to create a card.
Once they have created a card, we hand out an official card and allow them to compare and ask questions.

On the second day, we then explicitly attend to the structure of the periodic table, developing vocabulary and raising additional questions to pursue.

<table>
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<th>Germanium, Ge</th>
</tr>
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<tr>
<td>atomic mass: 72.60</td>
</tr>
<tr>
<td>moderately soft, silvery white solid</td>
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<tr>
<td>density at 298K: 5.323 g/cm³</td>
</tr>
<tr>
<td>melting point: 1211 K</td>
</tr>
<tr>
<td>boiling point: 3093 K</td>
</tr>
<tr>
<td>conductivity: 60 W m⁻¹K⁻¹</td>
</tr>
<tr>
<td>reacts very slowly with oxygen in air</td>
</tr>
<tr>
<td>forms GeH₄ gas</td>
</tr>
<tr>
<td>combining power: 4</td>
</tr>
</tbody>
</table>

<table>
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Developing the Periodic Table: Part II

NGSS Performance Expectations:

HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. [Clarification Statement: Examples of properties that could be predicted from patterns could include reactivity of metals, types of bonds formed, numbers of bonds formed, and reactions with oxygen.] [Assessment Boundary: Assessment is limited to main group elements. Assessment does not include quantitative understanding of ionization energy beyond relative trends.]

Background:

On Day 1 of this activity, students familiarized themselves with characteristic properties of elements, and, for a subset of the periodic table, organized those elements into a structure of the Periodic Table.

On Day 2, students are each assigned an element, and they organize themselves into the major “groups” of the subset of the periodic table. From here, they examine their table and formally note the patterns there, along with how this subset of the periodic table fits in the larger periodic table. In addition, students are introduced to isotopes. This activity is more tightly guided, as students learn vocabulary terms and interpret results from their table.

At this point, students are still simply looking for patterns and learning the names of those patterns. In many ways, today’s activity repeats major ideas from yesterday. However, if this is the students’ first introduction to the periodic table, such repetition is helpful. Moreover, as each student is assigned an element, and explores their relationship to “neighbors” in the periodic table, the ideas from the previous day are clarified.
On the following day, students will be introduced to the structure of an atom to account for these patterns; they will stay with their element as they consider how it is “built” and why it has so much in common with other elements in its group.

One idea we want students to garner from this activity is the incredible and surprising result that, when we order by mass, regular patterns appear in the characteristics of elements; the periodic table is designed to capture this pattern. And these patterns beg explanation.

Getting started:
Ask students to line up around the classroom from shortest to tallest. (This organization will help students to visualize the increasing ‘mass’ of atoms; however if you anticipate that this will be too distracting or time-consuming for your class, you might consider having students line up from youngest to oldest.)

Starting with the shortest (or youngest) hand out the element cards in order, so that the shortest student is Hydrogen. If you have more than 34 students, you should develop a few more cards from the next row of the periodic table. As you pass out the cards, help students with to pronounce the name of their element. When you come to the “out of order” elements (where mass is not increasing, although the mass number is), rearrange the students, putting the taller student ‘ahead’ of the shorter student - to be consistent.

After students examine their cards, ask for a show of hands regarding characteristics of the elements. The goal here is to see that the patterns are scattered; when students organize into the periodic table, the patterns will become more obvious. Below is a series of possible questions, feel free to use the cards to develop your own questions or sequence:

- Okay - so we’re going to look around the room and try to find some patterns in our elements. I want you to raise your hand if you are a metal. …
- What about those of you who are gases? …
- Who reacts with water? …
- And now let’s look at combining power - you know how some people have one really close friend, others like to travel in big packs of friend? We can think of ‘combining power’ as the number of bonds an element makes - some prefer a few close friends, some lots. Some none at all. So raise your hand if you have a combining power of 1… 2?… 3?…. 4?…. 5?… no fives?
- [*You might want to have a short discussion here - perhaps saying something like “so that tells us something, I think - all these elements can connect up with one, two three or four other elements, but not to five. Any ideas as to why?” — Students will likely draw connections to other scenarios where - because of structure - only certain pairings are allowed: legos, for example, or dance partners. This conversation can become lengthy, so you may opt to discuss this later.]*
- Point towards the neighbor who has a higher combining power than you do…
- And we saw yesterday that sometimes a combining power of 1 wants to combine with H, sometimes with Cl. So, again, raise your hand if you’re a 1… and keep it raised if you’re a 1 who combines with Cl. Everyone who combines with Cl raise a hand? And Cl — (ask the person with that element to describe his ‘combining power’)?
• Okay, look at the density of your neighbors and point towards the person who is MORE dense than you … [here you should see fewer clear patterns; only when arranged in columns do the patterns become more clear]

As you ask the questions above, students should be seeing some obvious patterns and some less-obvious patterns. If they had thoroughly understood ideas from the previous day, this will be a simple demonstration and recap of those ideas. For students who had trouble with finding the patterns in the periodic table, this should help. We find that reminding students of the major patterns — the number of “bonds” an element can make; whether it bonds with H or Cl, where the gases are — is helpful for all students.

Now you’ll want to remind students that, as they found yesterday, the patterns in the elements are best seen when organized into a table and not a line. Quickly reorganize the students so that they are standing in the form of the periodic table, shown below:

![Periodic Table Image]

Now revisit the patterns, asking students to identify patterns they find occur horizontally, and then vertically. This time, as you do, collect ideas at the front board.

Some of the patterns they should find — it is not necessary to articulate all of these. The goal is simply to recognize that the columns have more in common than the rows:

Horizontally:
- atomic number increases, atomic mass increases, combining power increases from 1-4 then decreases from 4-1, the ratio of Cl to element increases to 1-3, the ratio of H to element decreases from 4-1, conductivity is > 1 for metals and metalloids and extremely low (<< 1) for nonmetals

Vertically:
- Top to bottom trends: atomic number increases, atomic mass increases, combining power is the same for a column, melting/boiling pt decreases for columns 1-4, melting/boiling pt increases for columns 5-8, density increases, hardness decreases (softness increases), reactivity increases for columns 1-6 but decreases for columns 7, for columns 7 and 8 conductivity decreases.

Triad Project

Atkins, Coates & Dotson
Isotopes:
Once students have articulated their ideas, ask them to return to their lab groups. Hand out the modified periodic tables from yesterday, and add three more cards: the isotopes of Carbon. These will not be labeled with a name, but will have all the other data. Ask students to decide where these should go in the periodic table. (*Note that this is a bit disingenuous: the atomic mass already assumes the presence of isotopes in calculating the average atomic mass. If students ask about this, feel free to clarify.)

In particular, you should write the following questions on the board:
1. Where do these elements belong? Be prepared to justify your answer.
2. What would you name these elements?

Students should be able to articulate their choice based on:
1. What row in the periodic table does this element card belong to?
2. What column in the periodic table does this element card belong to?

In addition, students should be confounded by:
1. Why is this not actually considered Carbon? — What characteristics are important in characterizing an element?
2. If this is, in fact, Carbon, why does it have so many different possible weights?

Give groups 5 minutes to discuss, and 5 minutes to organize their answers. They should prepare a small whiteboard with their justification, and place the cards where they think they belong. As students work, circulate around the classroom to get a sense of the variation in ideas. If most groups are suggesting that this card is just a “variation” of Carbon and should be placed in the exact same spot as Carbon (or “under” or “over” Carbon), then you can anticipate a brief discussion at the end. On the other hand, if there is a lot of variation, be prepared to focus the conversation on the roles of rows and columns in the periodic table — and guide students to use those in their determination.

Gallery walk
Ask each group to select an “explainer” who will stay at their table. Everyone else in the group will visit the other tables to take notes on their organization and justification.
After everyone has had 5 minutes to view (admittedly not very long), reconvene the class to ask for their ideas.

The outcome of this conversation is not consensus, but instead that students can articulate how the periodic table is structured, and how they use that structure to place these new element cards. In later classes, students will explore the structure of the atom and learn that these elements are considered isotopes of Carbon.

**Assessment**

Before students leave class, ask them to jot down their ideas about these new elements and what questions have been raised by these activities.
Appendix J-2

Triad Project:
Disambiguating Force and Energy
Disambiguating Force and Energy: Initial Steps

NGSS Standards:

**Asking Questions and Defining Problems**
A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world works and which can be empirically tested.

**PS3.A: Definitions of Energy**
Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms. (HS-PS3-1),(HS-PS3-2)

**PS3.B: Conservation of Energy and Energy Transfer**
Conservation of energy means that the total change of energy in any system is always equal to the total energy transferred into or out of the system. (HS-PS3-1)

Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems. (HS-PS3-1),(HS-PS3-4)

**Background:**
There are many concepts in introductory physics that that are used to explain the motion of objects: force, work, power, energy. Students often have difficulty in teasing apart these different ideas. For example, they might describe force as something that is transferred. The relationship between force and work is confusing: why do some forces 'do work' and others don't? - The mathematical model suggests that the difference has to do with distance, but why? And speaking of “doing work” why is work a thing that is done, force a thing that is applied, and

**Schedule**
- 20 minutes: **Getting Started** initial ideas - worksheet and lab group discussion
- 20 minutes: **Discussion** whiteboards discussion as a whole group
- 20 minutes: **complex pulleys**

**Materials**
- Small whiteboards for each lab group
- Pulleys, weights, and spring scales
- Computers with internet connection, if possible

**Set-up**
- students will spend most of the time in lab groups
- groups should be able to face one another for whole-class discussions

Triad Project
Atkins, George & Hauskens
energy a thing that is transferred? And is power applied, done or transferred? While knowing precise definitions of these terms is important, definitions alone will not help students disambiguate these concepts.

To illustrate how hard it can be to understand the differences between force and energy, and the way in which definitions are of limited use in disambiguating the ideas, imagine re-writing the “definition of energy” by replacing “energy” with “net force:”

*Net force is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system.

This is - of course - also true. However, net force is not conserved, while energy is. Saying net force is a “property” of a system is then a little more problematic - we (implicitly) think of “properties” as relatively fixed quantities (and hence conserved). Nonetheless, this should help illustrate why the definition of energy is only so useful in explaining how energy and net force differ. Mathematical models are also of limited use: students can easily use those to recognize that force and energy have different numerical values, but it does not answer questions about the differences between the concepts.

The goal of our first few lessons is for students articulate questions that help them disambiguate these concepts. In particular, we find simple machines to be a valuable starting place: small forces can be “amplified” to move heavy objects; students often have a feeling that, in doing so, you get something for nothing. By starting here, students have a chance to revisit ideas about Newton’s Laws and articulate some puzzling questions that these simple machines raise — questions that are best addressed by work and energy, and not forces. **We ask student to debate what is “responsible” for lifting the mass attached to a pulley.**

The ambiguity “responsible” is deliberately ambiguous. As students debate the answer, this ambiguity should become clear, and you will want to encourage students to articulate a more precise question. In particular, we hope students will ultimately articulate that the question “what is applying a force?” is inadequate to describe what pulleys do; instead “what is expending energy?” is as critical a question as force. (Knowing here that, as students are beginning the unit on ‘energy’, the question “what is expending energy” is perhaps an un-nuanced question.) In this way, students begin to understand the kinds of questions that energy — as a concept - can address, and why force does not answer those questions.

Prior to this unit, students should be familiar with forces and Newton’s Laws. They will begin by considering simple pulleys, and then moving into more complex pulleys. Again, the goal of this first lesson is the (clear) articulation of questions, rather than any particular analysis of the pulley. However, students should be familiar enough with Newton’s Laws (and tension in strings) to correctly analyze the forces present in these pulley systems.

**Getting started**
We start by giving students a very simple pulley, one that simply changes the direction of the applied force. This should be a recap/assessment of prior ideas on force - while also setting them up to analyze more complicated scenarios:
Begin by asking students to work through a few questions related to this set-up. You could provide each student with the following worksheet, or you could simply put this set of questions on the board and ask each student, and then group, to use a whiteboard to share their answers.

We find giving every student a chance to think through the ideas on their own before working through them in a group allows everyone the opportunity to articulate their ideas and bring something to the group.

You might start by saying something like:

Okay — we’ve spent the last few weeks developing some ideas about forces. In the next few weeks, we’re going to start looking at some related concepts: work, energy, power. But I want to start by looking at a scenario that should be pretty easy to analyze, and to look at the forces involved.

So on your desks you have a simple pulley system, and I want you to think about your answers to the following questions [hand out worksheet or put questions on an overhead projector or the board]. Take 5 minutes to figure our your own answers, and then, as a lab group, discuss those answers and write up your group answers on your whiteboards.

As students work, circulate among the groups. Some may want to test out their answers using the system at their lab station. We encourage this: they should be able to check their ideas with the set-up and clarify any questions about forces. Help them set-up their pulleys and use the spring scales if needed.

They will likely have questions when they tackle Question 3: “what do you mean ‘lifts the weight’ - do you mean …?” You could say something like “Say more about that …” to try to get them to clarify what they think a more clear question would be. Or: “What are some ways that you could interpret that question?” Or: “So one of the groups is saying that they think the ROPE (or HAND) is what is lifts the weight - so how do you think they are interpreting that question?” In general, let the students define the question as they see fit, and help them in articulating their ideas.
Your students might be used to answering well-defined questions, and not refining a question as the goal of a lesson. You might say, if they ask about this question,

“So that’s really what we’re going to be talking about — what is meant by this question? is this the same thing as asking ‘what force is responsible for lifting the weight?’ And if not, then we need to find a way to ask this question more precisely - in a way that really captures what it is that pulleys do.”

And do not expect students to have well-defined questions after this one exercise! - We will turn to a more complex pulley-system and revisit and refine the questions later.

Ask students to jot down any ideas and thoughts about this question on their whiteboard.
A simple pulley.

With your group, think through the following questions — these aren’t mean to be tricky, but just to get us all on the same page before we look at more complicated pulleys:

1. If the weight is 12 pounds, how much force do you have to apply to lift it up at a constant speed? < 12 pounds, = 12 pounds, or > 12 pounds?

2. What force does the ceiling have to exert to hold on to the pulley while the weight rises?

3. What would you say lifts the weight: the hand, the pulley wheel, or the ceiling? Or something else? Why?
**Discussion**
Before tackling the third question from the worksheet, be sure that everyone agrees on the forces at play — the hand is pulling down with 12 pounds of force; the tension in the rope is 12 pounds, and the force of the ceiling is 24 pounds + the weight of the pulley itself. (If your students are comfortable ignoring that weight, feel free to say “let’s assume the weight of the pulley itself is negligible.”)

Having this consensus diagram up on the board will help serve as a reference in the discussion.

![Diagram of forces](image)

The goal of this discussion is to refine the question: “What would you say lifts the weight?” Depending on the conversations you’ve had at with lab groups, you might start with this question, saying something like:

*Riley, I know your group debated this a lot. Can you start us off by showing what’s on your whiteboard?*

As they share their responses, bring others into the conversation —

*Victoria, your group thought about that - but you decided that the rope was not the best answer - can you say why?*

Alternatively, you may have groups that did not decide on answers, but have already worked to define the question more clearly:

*I know that a lot of groups decided that this question was just too ambiguous to answer. Luis, your group proposed a different question — can you start by sharing this?*

... [repeat their ideas for everyone] okay, so you think a lot of things matter here, but there is one thing you say ‘gets tired’ by lifting the weight?

... And Kate, your group wanted to say something different - you wanted to talk about the force that started it all...
Have all the groups share their ideas, inviting them to be in conversation/debate with one another. As they share, collect ideas on the board. You might keep a running list of ways that students interpret “what lifts the weight.” Or, if the conversation is somewhat different, keep a list of justifications for each of the possible answers — effectively constructing a list of interpretations of the question.

For a particularly energetic group, this conversation could be lengthy — at some point, you’ll need to wrap up the discussion, saying something like:

Okay - so I know that there’s a lot of disagreement here on the best way to interpret this question / what you think should be considered the thing that is doing the lifting. I think - really - that this question is one that doesn’t have a right answer — and the ideas that you guys are coming up with are getting at some really critical ideas [summarize those ideas]. I want to keep these up here for now and consider more complex pulleys to see if we can get a better handle on how we want to understand “what lifts.”

In the next set of investigations, students will revisit these questions but with a more complex set of pulleys. These are scenarios where the force the hand applies is not the same as the weight that gets lifted; what is equivalent is the energy that the hand expends and that the energy that the weight gains. Going into the next set of investigations, students should recognize that they are trying to (1) understand how pulleys work, and (2) develop clear questions around that problem. As an instructor, your goal is for students to raise questions and have experiences that will ultimately help them distinguish between force, work and energy.

**Complex Pulleys**

Here, we begin as we did with the simple pulley: students have a chance to think through the questions on their own, then work in lab groups - with access to materials if possible, and then share their ideas with the whole group. Depending on timing, you may opt to have students do the worksheet first as homework, giving them a chance to carefully outline their ideas about what it means to “lift” the weight.

the last two pulley systems, because they involve more than one rope (and, therefore, more than one tension), are more difficult. You might assign these to students who are not having difficulty with forces, or may opt not to assign them at all.
Complex pulleys.

Below are some more complicated pulleys. Choose one (or, if your instructor has assigned one, use that one) that you want to analyze:

1. If the weight is 12 pounds, how much force do you have to apply to lift it up at a constant speed? < 12 pounds, = 12 pounds, or > 12 pounds? Sketch a diagram to explain your answer.

2. What force does the ceiling have to exert to hold on to the pulley while the weight rises?

3. What would you say lifts the weight: the hand, the pulley wheel, or the ceiling? Or something else? Why?
Notes for the instructor regarding the worksheet:

If you give this assignment as homework, ask students to write up a paragraph (or more) regarding question 3. In their answer, they should clearly explain what they think it means to “lift” the weight. *

The hand should apply 6, 2, 3 and 4 pounds of force for pulleys 13, 15, 16, and 21 (respectively). For students who have not looked at pulleys extensively, determining those forces is not straightforward.

If possible, have these pulley set-ups available in class so that students can get a feel for the different force needed to lift each weight, and so that they might notice that the ropes move different amounts in each case.

These pulleys are also available online as animations — http://507movements.com/ — and this can be useful for students as they discuss.
Discussion
As with the exercise using the simple pulley, students should first consider these questions on their own, then in their lab groups they should try to reach consensus, and - as a whole class - move toward a more nuanced understanding of the role of forces, distance and (ultimately) work and energy in lifting the block.

And, much like the prior discussion, you should have the following diagrams on the board, with forces drawn in:

If students find the problem unproblematic, you can ask them something like “why might someone say it is the ceiling that lifts the weight?” or “why is the hand the one lifting the weight? If the weight is 12 pounds and the hand is only exerting 6 pounds of force, isn’t something else helping to ‘do’ the lifting?” If they say the “rope” — ask why not the hand?

Through the conversation, try to highlight this apparent paradox: we have a sense that the hand is the thing that, in one way or another, is responsible for lifting the block: it’s the thing that moves, that gets the whole operation started, and the person with the hand is the thing that gets tired from doing this lifting. But the hand does not always supply the same amount of force: hand applies 6 lbs of force, weight feels 12 lbs of force.

If no one mentions it throughout the conversation..
Appendix J-3

Triad Interview Protocol
The Triad Project
Focus Group Interview Protocol

1. Tell me about working with your Triad. What was that like? How might you compare it to working with other groups of science teachers/educators?

2. What did you learn about teaching science by working on this project?

3. What key skills, if any, has the project helped you to develop that are essential to teaching the NGSS?

4. Has the project changed how you see the NGSS? If so, in what ways?

5. Has the project changed how you approach science teaching? If so, in what ways?

6. Has the project changed how you view teacher professional development? If so, how?

7. Has the project changed how you view school district and University partnerships? If so, how?

8. What did you like most about your Triad Unit?

9. Do you think that your unit did a good job of meeting the needs of all of the learners in your classes? Why or why not?

10. Is there anything else that you would like to share about working on the Triad Project?
Appendix J-4

Triad Participant Survey
Triad Participant Survey

As part of the Triad project, we would like to feedback on your experience. Please rate your experience in the project.

1. How much did the Triad project improve your confidence level in how to read, understand, and interpret NGSS?
   1  2  3  4  5  6  7  8  9  10

2. How much did the Triad project help you to translate NGSS into your practical instruction?
   1  2  3  4  5  6  7  8  9  10

3. Prior to this project what was your comfort level of NGSS?
   1  2  3  4  5  6  7  8  9  10

4. After this project what is your comfort level of NGSS?
   1  2  3  4  5  6  7  8  9  10

5. How much of a cooperative experience would you rate the project?
   1  2  3  4  5  6  7  8  9  10

6. Compared to other forms of Professional Development that you’ve had, how would you rate this experience?
   1  2  3  4  5  6  7  8  9  10

7. How well do you feel like the unit met the needs of your students?
   1  2  3  4  5  6  7  8  9  10
   a. Higher performing students?
      1  2  3  4  5  6  7  8  9  10
   b. Lower performing students?
      1  2  3  4  5  6  7  8  9  10
   c. Students in special education?
Please share your thoughts on your experience.

8. Please share how the collaboration process went for you.
   a. Was it non-hierarchical?
   b. Collaborative?
   c. Were there enough meetings?

10. What kinds of expertise did each person bring to the triad?
    a. Science Education specialist
    b. Student teacher
    c. Coordinating teacher (you)

11. Pedagogical perspective: How this process affect your thinking about: assessment, teaching and teaching science, engaging students?
    a. –SPED
    b. –ELL

12. CT: How do the NGSS standards compare to previous state science standards?

13. How have the NGSS caused you to change your classroom practice?

14. Did the Triad lesson planning process help you meet the different dimensions of the NGSS standards, as well as the CCSS & ELD? Please explain:

15. Do you have any suggestions for future Triads?

16. Do you have any further comments for the Triad Project?
Appendix J-5

Modified EQuIP Rubric
Lessons & Units: Science
Modified EQuIP Rubric for Lessons & Units: Science

I. Alignment to the NGSS

The lesson or unit aligns with the conceptual shifts of the NGSS:

☐ Elements of the science and engineering practice(s), disciplinary core idea(s), and crosscutting concept(s), blend and work together to support students in three-dimensional learning to make sense of phenomena or design solutions.

☐ Provides opportunities to use specific elements of the practice(s) to make sense of phenomena or design solutions.

☐ Provides opportunities to construct and use specific elements of the disciplinary core idea(s) to make sense of phenomena or design solutions.

☐ Provides opportunities to construct and use specific elements of the crosscutting concept(s) to make sense of phenomena or design solutions.

Comments:

II. Instructional Supports

The lesson or unit supports instruction and learning for all students:

☐ Engages students in authentic and meaningful scenarios that reflect the practice of science and engineering as experienced in the real world and that provide students with a purpose (e.g., making sense of phenomena or designing solutions).

☐ Provides students with multiple phenomena (either firsthand experiences or through representations) that support students in engaging in the practices.

☐ Engages students in multiple practices that blend and work together with disciplinary core ideas and crosscutting concepts to support students in making sense of phenomena or designing solutions.

☐ When engineering performance expectations are included, they are used along with disciplinary core ideas from physical, life, or earth and space sciences.

☐ Uses scientifically accurate and grade-appropriate scientific information, phenomena, and representations to support students’ three-dimensional learning.

☐ Provides opportunities for students to express, clarify, justify, interpret, and represent their ideas and respond to peer and teacher feedback orally and/or in written form as appropriate to support student’s three-dimensional learning.

Comments:

III. Monitoring Student Progress

The lesson or unit supports monitoring student progress:

☐ Assessments are aligned to the three-dimensional learning.

☐ Elicits direct, observable evidence of students’ performance of practices connected with their understanding of core ideas and crosscutting concepts.

☐ Formative assessments of three-dimensional learning are embedded throughout the instruction.

☐ Assesses student proficiency using methods, vocabulary, representations, and examples that are accessible and unbiased for all students.
Appendix J-6

Fall Triad Workshop
Invitation
You are invited!!

We have a grant project (The Triad Project), which has been ongoing this semester under the direction of Drs. Al Schademan, Tal Slemrod and Leslie Atkins, whose focus is on having local science teachers and CSUC teacher candidates working together to plan and implement exciting new NGSS science units at the secondary level. Those units will be presented at an event on December 9, 2015 from 6-8 p.m.

The Project ESTEEM grant in which you are involved (Drs. Kotar and Seipel), and which is scheduled to begin on January 1, will do some of the same types of work at the elementary level. We thought some of the projects, and certainly the nature of the work, would be of interest to you.

The evening will begin with short presentations by the Triad teams followed by breakout sessions with attendees forming small pods in conjunction with a Triad team during which attendees will have a chance to ask questions and share resources on these new exciting science units. Appetizers and refreshments will be served. See registration information below... Please come!

Come learn some fun new ways to teach science!

Triad Next Generation Science Standards Workshop

Date: December 9, 2015
Time: 6:00 pm-8:00 pm*
Location: CSU, Chico
Langdon Hall, Room 302
Engineering Building at First and Warner Streets
*Beverages and "finger foods" will be available.

So that we may set an accurate count for catering, please RSVP HERE Or by email: djohnston@csuchico.edu
Appendix J-7

The Triad Project: Student Models
The student-generated models shown below are two examples of student work from the Pleasant Valley Biology Triad comprised of teacher candidate Chelsea Mitchell, science teacher Bill Flory, and science educator Al Schademan. The unit addresses the following NGSS performance expectation: **HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.** This standard involves the following three dimensions:

1. **Science and Engineering Practice:** Developing and Using Models
3. **Crosscutting Concept:** Systems and System Models

This NGSS lends itself particularly well to model-based instruction (MBI) during which teachers provide students with a “puzzling phenomenon” that serves as an “anchoring event” for all subsequent instruction and learning. The anchoring event provided in the Pleasant Valley Biology Triad unit was the growth of a tiny Giant Sequoia seed into the General Sherman Giant Sequoia in California, one of the largest living organisms on planet Earth. The guiding question for the unit was simply: Where does all the mass of the General Sherman come from? The answer to this seemingly simple question is both complex and counterintuitive, as much of the mass of the tree comes from the carbon in carbon dioxide.

To provide students with access to this performance expectation, we use MBI to help both students and teachers address all three dimensions of the standard simultaneously. A close examination of the student models below demonstrates that they are able to make close connections between: 1) the processes of photosynthesis and cell respiration, 2) where the constituent elements of these processes emanate from (i.e., water, soil, air), 3) the products of these processes (i.e., oxygen, glucose, energy), and 4) how these processes and products are essential for cell division and plant growth. The models also demonstrate how students are addressing all three dimensions of the standard. The students are: 1) creating and revising models (science and engineering practice), 2) making connections between the molecular processes of photosynthesis and respiration, the macro processes of the carbon and water cycles, and the role of energy in chemical processes (disciplinary core ideas), and 3) creating
models of complex, dynamic systems (crosscutting concept). This kind of integrated, complex, systems thinking is the main goal of the NGSS, as it helps students develop deep and long-lasting understandings of complex phenomena. The act of modeling and model revision helps to bring it all together, as shown in both student models below.

**Student Model 1.** Student-generated model showing how plant growth is related to both molecular plant processes and the macro processes of geochemical cycles.
**Student Model 2:** Student model showing a relatively more simplistic representation of the core ideas of cycles of matter and energy transfer in ecosystems and energy in chemical processes, and the crosscutting concept of systems and system models.
Appendix K

California State University
East Bay

Targeted Project
Preparing a New Generation of Educators for California
Campus Grant Interim Report Template
Due Date: November 2, 2015

Please single space and use 12-point Arial Narrow font. Save your report as “Interim Report
NGEI Campus Name” and email to ryopp@fullerton.edu by 5:00 p.m.

Campus Name: CSU East Bay
Project Contact(s): Eric Engdahl
Contact Information: eric.engdahl@csueastbay.edu

Brief summary of the project and its goals
The three goals of this project are (1) to revise syllabi in math methods courses, (2) to build strong partnerships between the departments of Teacher Education and Mathematics and single subject math teachers at Castro Valley Unified School District through co-teaching and co-planning, and (3) strengthen the understanding of the California Math Standards are connected through the pipeline and into higher education. The partners in this project are Drs. Julia Olkin (Math), Julie McNamara (Teacher Education), Andrea Eldridge (Math, Castro Valley HS) and LaQuetitta Hill (Science, CVUSD). Together they are modifying course syllabi for the four quarter long Teacher Education single-subject math courses, an undergraduate math course, and a high school math class. Their goal is to link the pedagogy and content of the courses, to embed within each of the courses the skills of Academic Discourse, and to model through their co-teaching of these courses Academic Discourse, which is key to mastering Mathematical Practice Standard 3 of the California Math Standards. This project will help students to understand and master all of the Mathematical Practice Standards.

In addition to co-teaching sessions in a number of university and high school math courses, the leaders will present two professional development workshops for math teachers in the CVUSD. The single subject math credential candidates will attend the professional development sessions, in addition to the work done in their courses. Among other things, it will provide them further opportunities to work with and learn from teachers in the field. These professional development workshops, scheduled for the winter and spring of 2016, are designed to help and support the math teachers in their adoption and implementation of the new standards.

The final goal of the project is the build a replicable model that we can use to continue this work in the sciences and with additional district partners.

1. Description of key activities and strategies accomplished (based on implementation milestones on the Tracking Your Progress form) against the timeline, including any partner contributions

The key activities that have occurred since the last report in August, 2015 are that an Algebra 2 lesson was taught to high school students at Castro Valley High School. The lesson was led by Eldridge, Olkin, and McNamara and observed by Hill. The lesson encouraged students to consider, discuss and experience three different ways to identify and match equations with their graphs and graphing. This was focused on exploring California Math Anchor Standard 3, “Construct viable arguments and critiques the reasoning of others.” The lesson was witnessed by one of the single subject math candidates in the credential program who is student teaching in the selected class. The high school students were surveyed at the end of the lesson. (results
A few days later on 10/26 all of the single subject mathematics candidates were co-taught the same lesson. The project partners played the same roles, three co-teaching and one observing. The candidates had the opportunity to experience the lesson, to hear from one of their colleagues exactly how the lesson worked with high school students, and to reflect and evaluate. (results attached). The results were positive overall. The importance of students being able to explain their reasoning was clearly noted, one candidate responded “I will make sure to give students more opportunities to verbalize and explain their reasoning.” Olkin and McNamara have also noted that the focus on explaining one’s reasoning clearly brings to the surface gaps in their students’ content knowledge which would otherwise remain hidden.

The partners have set the dates and begun the planning process for the professional development sessions with the high school math faculty from CVUSD. The district administration is pleased with the work thus far and has asked that the middle school math faculty also be included in the professional development sessions. Eldridge, who came into the partnership as a high school math teacher, is now a teacher on special assignment focusing on math. The new position is providing more dissemination of the learning from the project throughout the district.

The partners are planning their report to the Dean (December) as well for their presentation at ATME in January. The activities and progress are congruent with the timeline in the Tracking Our Progress form.

2. **Analysis of projected outcomes and impacts as compared to intended outcomes and impacts. Use your Tracking Your Progress form to analyze your potential to meet your short term and long term projected outcomes.**

Since the submission of the Tracking Report the project continues to move towards the intended outcomes and impacts. One event was moved a week later, due to scheduling conflicts, but the progress continues at the intended rate. The date for the first professional development sessions has been set, and we are waiting confirmation on the scheduling of the second date. We are beginning work with our PACT coordinator to determine the best means to collect PACT lessons from the math candidates since one of our impacts is seeing if the content transmitted through the program is reflected in how our candidates write, plan and deliver instruction. We will most likely not be able to collect and analyze them until after PACT submission and evaluation, but that is still in the planning phase.

The partners have noted that through working with math students in high school, in undergraduate education, and as post-baccalaureate candidates they have reached understandings of how certain misconceptions get promulgated and in how necessary it is continually re-educate students so that they learn “how to do math” - not just “how to get the answer.” Of course, this is at the heart of the new Math Standards for California, but it is an ongoing and long-term process that will continue beyond this program.

3. **Summary of formative evaluation results, including evaluation instruments and**
The team surveyed the participants from their co-taught classes. The high school students were asked three questions: 1) Share one aspect from one of the activities that you found helpful for your Benchmark review? 2) What questions did you ask of, or answer for, your classmates? 3) What would you recommend for future lessons using these activities? Their responses to the first question were interesting in that different activities did resonate for different students. The responses to question 2 indicated that by and large they still have room to grow when it comes to asking substantive questions.

The credential candidates were asked five questions and their responses to the first question, How did using the different instructional formats impact your learning? In particular, how did they provide opportunities to engage in discourse?, were interesting. They showed an understanding of important different approaches are and how it is important for students to have multiple paths and experiences in order to learn. The partners were also pleased that the candidates’ responses demonstrated good reflection skills.

4. Explanation of major risks/challenges inhibiting implementation of key activities and strategies undertaken to mitigate them (Tracking Your Progress form may be helpful.) (1/2 page)

There are really no challenges to implementation, although there is one budget issue to raise. CVUSD has made one of the professional development sessions part of a district PD day. In the budget, there was money set aside to pay teachers to attend two professional development workshops, but of course, it is not possible to pay the teachers for attending a district sponsored day. The partners believe that using these funds to buy materials for the teachers would be an effective use of the funds, if the funder concurs.

It would also be helpful if we could receive some time with someone who can help us to design effective post-event surveys. Perhaps there is another site that has that expertise.
Q1 How did using the different instructional formats impact your learning? In particular, how did they provide opportunities to engage in discourse?

Answered: 15 Skipped: 0

<table>
<thead>
<tr>
<th>#</th>
<th>Responses</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Each activity was very different. The first activity made me think of what students need to know in order to be able to examine a graph and find the equation. For students the first activity would be interetsting enough to capture their attention. The second activity was very entertaining and interactive. Students will need to be able to describe each picture.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>2</td>
<td>I liked that there were 3 different ways to see and connect with the material. Although I liked all methods I founds the search and rescue activity to be the most helpful because I was actively writing the equations and graphs. The others were more passive activities, although the matching activity did allow for interaction with your partner and allows students who may know the material better to teach their classmates during the activity if they don't know how to see or interpret the graphs. The search and rescue activity also allowed for this discourse and gave both students a chance to connect with the graphs and explain their thinking to one another.</td>
<td>10/26/2015 7:36 PM</td>
</tr>
<tr>
<td>3</td>
<td>The different instructions were very helpful because it helps with different types of learners. The activities were engaging and informative.</td>
<td>10/26/2015 7:35 PM</td>
</tr>
<tr>
<td>4</td>
<td>All the three formats were really interesting and engaging. The first one really got us thinking and gave a precursor to what was coming. The matching game was exciting because of its game format. But again it gets us thinking about what we have learnt about functions. The last two formats would be helpful to clear any misconceptions, because it is really confusing when we need to think about all the functions together. It was helpful having a partner to discuss and clarify certain things.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>5</td>
<td>There were a lot of opportunities for pair sharing, particularly during the memory match game and search and rescue activity. Being able to discuss our ideas with our partners really helped deepen our individual understandings of material.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>6</td>
<td>I thought that these different strategies were very helpful with understanding different ways to interpreting the slope, y-intercept, and graphs. I enjoyed the more hands-on activities that students were able to interact with other students and act like the teacher when explaining different things. I thought they all were great activities that I will be able to use in my classroom at some point.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>7</td>
<td>It was helpful to think about things in different ways because we were working in different ways. While we were doing different activities, it provided different settings and angles to look at the same topic. This way, I feel that maybe we were able to cover more things in our discussions rather than just saying the same things over and over for each activity. Overall, it provided a lot of opportunities for discourse because a new card or new set of equations would provide another opportunity.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>8</td>
<td>It's always good to have different instructional formats. I liked some better than others (I particularly liked the matching game) but I can see how would be great for a class to try lots of different things. Even as an individual, it's good to try a few different approaches to the same topic.</td>
<td>10/26/2015 7:33 PM</td>
</tr>
<tr>
<td>9</td>
<td>The different formats engaged me in the lesson. I was actively learning, and contributing ideas to my partner. Doing the matching game gave me and my partner the opportunity to take turns talking about the material. It forced us to both talk and listen.</td>
<td>10/26/2015 7:33 PM</td>
</tr>
<tr>
<td>10</td>
<td>Some of the different instructional strategies were more engaging to me than others. Both activities with a partner made it easier to think about the concepts since we could bounce them off each other or help each other if needed. The first activity was more frustrating because the rotation changed the parameters of the problem over and over.</td>
<td>10/26/2015 7:33 PM</td>
</tr>
<tr>
<td>11</td>
<td>I think that using the different formats helped me to understand what problems some students might have with different activities. I have a lot of resource students with visual processing disorders and I could see them struggling with these activities even if the math were at a more basic level. I did feel like having a partner that was very descriptive helped me to visualize the graphs and how he/she was constructing the graphs in his/her mind.</td>
<td>10/26/2015 7:33 PM</td>
</tr>
<tr>
<td>12</td>
<td>It gave different opportunities for me to interact and explain my reasoning.</td>
<td>10/26/2015 7:32 PM</td>
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<td></td>
<td>Feedback</td>
<td>Date &amp; Time</td>
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<td>---</td>
<td>---------------------------------------------------------------------------------------------------</td>
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<tr>
<td>13</td>
<td>Allowing me to first think about my personal prior knowledge before comparing and sharing with my classmate(s) allowed me to formulate my own thoughts without being affected by anyone else's thoughts/ prior knowledge. I was better prepared to thoughtfully discuss and add relevant input.</td>
<td>10/26/2015 7:32 PM</td>
</tr>
<tr>
<td>14</td>
<td>They made me want to figure out what the graphs look like so that I could complete the tasks.</td>
<td>10/26/2015 7:31 PM</td>
</tr>
<tr>
<td>15</td>
<td>having different formats kept class interesting because I was able to get a different viewpoint from these formats which enhanced my learning experience.</td>
<td>10/26/2015 7:31 PM</td>
</tr>
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</table>
Q2 How did having three instructors impact your learning?

<table>
<thead>
<tr>
<th>#</th>
<th>Responses</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There was more time for the teachers to ask us questions and for us to ask questions. The teachers were constantly moving around the classroom, and checking in with groups about their progress. They also asked questions to help us move along in the activity.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>2</td>
<td>The three instructors were great. Each teacher had their own teaching style which helps with different learners. I appreciate all the different perspective that each teacher have.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>3</td>
<td>I did not feel that the switch between instructors was jarring at all. Of course, having 3 very experienced instructors probably lessened the effect of transitions, and particularly since the transitions coincided with different activities I felt like there was no negative effect on my learning. I did not feel the instructional styles were different enough to allow me to judge a benefit or detriment to additional instructors during this class.</td>
<td>10/26/2015 7:38 PM</td>
</tr>
<tr>
<td>4</td>
<td>It brought different perspectives, but I can imagine it could be distracting for high school students.</td>
<td>10/26/2015 7:38 PM</td>
</tr>
<tr>
<td>5</td>
<td>The 3 instructors helped up do the actives in a more guided manor. If we were stuck or confused it was more likely that one of the 3 instructors would be there to help us than if there was just one instructor.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>6</td>
<td>I guess it is interesting to have different instructors. It kind of gives us different flavors. But other than that I think it would have been the same if this activity was done by one instructor.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>7</td>
<td>It is nice to not always hear one person speak. I enjoyed being able to see how each instructor brought their own types of teaching methods to the table.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>8</td>
<td>Having three instructors increased the productivity of my learning because it allowed me to be more focused on my learning because I knew there were more eyes watching.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>9</td>
<td>The three teachers had similar teaching &quot;vibes&quot; so the classroom was consistently energized, but focused, as opposed to three teachers where each has very different energy levels.</td>
<td>10/26/2015 7:35 PM</td>
</tr>
<tr>
<td>10</td>
<td>It was kinda nice to have three different perspectives of teaching, and made each activity stand out a little bit more.</td>
<td>10/26/2015 7:35 PM</td>
</tr>
<tr>
<td>11</td>
<td>I like the different viewpoints of the instructors so it can help me have a new understanding</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>12</td>
<td>It was fine, but I think it's significant that the three teachers were all working together and obviously had good chemistry. I can imagine it going poorly with a different team.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>13</td>
<td>I don't know. I guess I was able to engage with a few different teaching styles, so it kept me on my toes.</td>
<td>10/26/2015 7:33 PM</td>
</tr>
<tr>
<td>14</td>
<td>I felt more urge to be engaged because I knew there was more attention on every student.</td>
<td>10/26/2015 7:33 PM</td>
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</tbody>
</table>
### Q3 How will tonight’s class impact your teaching?

Answered: 14  Skipped: 1

<table>
<thead>
<tr>
<th>#</th>
<th>Responses</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>These activities gave me ideas to use in reviewing for tests. These activities were very engaging, and gives students many opportunities to talk about mathematics.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>2</td>
<td>I will use most of the activities that we used tonight. I can use the memory game when reviewing math concepts.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>3</td>
<td>I felt that seeing the wide range of responses, graphing preferences, and arithmetic speeds among even &quot;math people&quot; should definitely inform how much I need to differentiate instruction. I had seen these activities in class before and already have been using them, but I plan to continue using them with appropriate class populations.</td>
<td>10/26/2015 7:38 PM</td>
</tr>
<tr>
<td>4</td>
<td>I think the activities used tonight are ones I could use in my classroom right now, I could modify them for different units.</td>
<td>10/26/2015 7:38 PM</td>
</tr>
<tr>
<td>5</td>
<td>I think I will try to do activities like this for a unit review. I will also try to mix up the activities I do in my class like we did because some types of activities are more effective for some students than others.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>6</td>
<td>I would definitely want to use these different strategies in my classroom. Just lecturing the students is boring. Having such engaging activities will be a very good addition to any classroom.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>7</td>
<td>I will be able to take these different lessons and change them into something that will work for what 8th graders are learning now. I enjoy learning new activities that will keep students engaged in learning math and enjoy it.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>8</td>
<td>Tonight’s class will impact my teaching because it shows how important discussion between students is to learning material. Even though we have already learned these things as adults and math credential students, discussion was good to build upon what we already knew and strengthen our mathematical foundations.</td>
<td>10/26/2015 7:37 PM</td>
</tr>
<tr>
<td>9</td>
<td>I hope to implement the strategies each teachers employed into my own classroom, i.e. asking for explanations/clarification, changing an &quot;easy&quot; question to a more complicated one simply by changing one thing (rotation, etc.)</td>
<td>10/26/2015 7:35 PM</td>
</tr>
<tr>
<td>10</td>
<td>This class has made me want to take more time to try and find more interactive activities for my class that will hopefully make materials more interesting for my students.</td>
<td>10/26/2015 7:35 PM</td>
</tr>
<tr>
<td>11</td>
<td>I want to incorporate some of these into my classes, depending on the topic of course. I can see slope-intercept, but other equations may be another story.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>12</td>
<td>I want to use more games in my teaching. I really liked the matching game activity and plan to use that. I think it's perfect in getting the students to do something I want for them - to think about the shape of a graph without worrying about the particular points. It's hard to get them to do that, but I keep asking them to. This will be a great tool.</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>13</td>
<td>It gave me ideas for mixing up instruction to make it more interactive.</td>
<td>10/26/2015 7:33 PM</td>
</tr>
<tr>
<td>14</td>
<td>I will make sure to give students more opportunities to verbalize and explain their reasoning. I will also make sure that I try my best to engage my students.</td>
<td>10/26/2015 7:33 PM</td>
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</table>
# Co-Taught Class Feedback 10/26/15

## Q4 Questions about tonight’s topics?

Answered: 12  Skipped: 3

<table>
<thead>
<tr>
<th>#</th>
<th>Responses</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is your grant about?</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>2</td>
<td>No questions.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>3</td>
<td>Would this activity be effective at other points of instruction besides review?</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>4</td>
<td>No questions</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>5</td>
<td>I have no questions about tonight’s topics.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>6</td>
<td>where do we find more such activities?</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>7</td>
<td>No questions, it was fun. Interesting to see how everyone would think about these ideas and how everyone would go about graphing them.</td>
<td>10/26/2015 7:39 PM</td>
</tr>
<tr>
<td>8</td>
<td>Is there a link to the powerpoint that helped explain what exactly was necessary to the unit plan? (Not the syllabus information)</td>
<td>10/26/2015 7:36 PM</td>
</tr>
<tr>
<td>9</td>
<td>How do you handle kids who are just choosing not to participate in activity at all?</td>
<td>10/26/2015 7:36 PM</td>
</tr>
<tr>
<td>10</td>
<td>no questions for tonight</td>
<td>10/26/2015 7:35 PM</td>
</tr>
<tr>
<td>11</td>
<td>Thanks!!!</td>
<td>10/26/2015 7:34 PM</td>
</tr>
<tr>
<td>12</td>
<td>How long did it make to create all those activities? What are the challenges of doing activities such as these with a classroom of 40 kids?</td>
<td>10/26/2015 7:33 PM</td>
</tr>
</tbody>
</table>
Appendix K-2

Attachment 2
Graphing Lesson - Debrief Responses

5th Period - Lesson given by Andrea

1) Share one aspect from one of the activities that you found helpful for your Benchmark review.
   - I found the search and rescue graphs activity helpful
   - Scavenger hunt was really helpful. Learning to identify graphs helps strengthen the concepts
   - It was a nice and fun way to re-learn and renew old work
   - S and R was very helpful because it helped me think the problems out
   - Nothing
   - Memory Match
   - S and R graphs was good practice
   - Getting help with the graphing
   - More teachers to help you 1:1 for questions you have, and they can all explain it differently
   - Learned to do the f(x) = -3x for the graph
   - Having the f(x) and the absolute value practice. Getting to work together
   - The locker Scavenger Hunt thing. It had practice problems that helped.
   - One aspect I learned would be with the f(x). I was confused at first when it came to that.
   - The Memory Match seemed like it would be great for introducing concepts
   - Reviewing graphing and key parts of the graph because that’s what I struggle with the most
   - I think the Memory Match was helpful for the Benchmark Review
   - I learned how to solve f(x) equations
   - Going outside to do problems. The card game was stupid
   - I found the S and R graphs helpful
   - The Memory Match helped me to think about graphing in a different aspect
   - If you do some question like -y < -x+3, be careful the negative y and remember to change the greater-than sign to less-than sign (sic)
   - The S and R problems and the card game was helpful
   - I thought the S and R was helpful because if the answer was incorrect, you could not continue solving problems. This would force you to recheck your work
   - The S and R was helpful because you had a partner to work with
   - I think the S and R was a good practice, causing you to solve then be able to look for it.
   - The most helpful activity was the S and R because it helped me fix my mistakes by seeing the answers
   - The activity I found most helpful was the Search and Rescue graphs.
   - I got a better understanding for graphs.
2) What questions did you ask of, or answer for, your classmates?

- I asked how to graph absolute value equations
- I answered how to find the origin point for an absolute value graph
- I asked how to do a certain equation I have never seen before
- I need help with absolute value so I asked about that
- I didn't ask questions.
- None
- Some of the equations we hadn't learned
- Where the correct graph was because I couldn’t find the one matching my graph but it turns out they made an error and the correct graph wasn’t there. :-)
- What the last number was in an absolute value equation. if it’s still the y-intercept. Yes it is. (sic)
- “How do you do this?” “How do you graph this?”
- I asked what f(x) meant. I also reminded them since we divide by a negative we have to switch the sign (of the inequality)
- I helped classmates that were stuck with slope and the signs
- I only asked about f(x) and what it meant
- We worked together to answer questions and stuff we didn’t know yet through guesswork
- How we were supposed to graph equations like y = -3x and x = 3; also the shading
- I asked questions when I didn’t know the answer
- “How do we do this?”
- None
- How do you interpret some of the equations
- That you can graph using the x-and y- intercepts
- N/A
- For the absolute value graph, I asked how to find the new vertex
- I asked how to solve the absolute value and the line would be shaped as a “V”
- I answered questions # 6 and 7 for my teammates and need none except for the dashed/solid lines
- I asked for a teacher to check my answer and she pointed ot my mistake
- I asked how you could tell if a graph is a parabola or v-shaped
- “What is y = x^3?”
3) What would you recommend for future lessons using these activities?
● I recommend using graphs with all aspects for future lessons
● N/A; everything was well (sic) :-)
● It was fun and straightforward. I don’t think it needs a change
● Try and make it more fun!
● Nothing, they’re good
● Nothing the lessons were helpful
● Take a little more time for each activity
● The matching activity because it was a nice reminder of what each equation matched each graph and vice versa
● Continue having teachers (more) to help 1:1
● Doing equations we’ve learned and not some we don’t know
● I recommend more practice before we go straight into something we’ve done in past
● More time lol
● Don’t make it seem childish
● The Memory Match at the start of a chapter; the other activities later in the chapter
● Nothing these lessons helped me a lot. THANK YOU :-)
● I would recommend the Search and Rescue graphs
● Getting rid of the card game
● I don’t have any recommendations
● I like the Memory Match
● Give us more time!!
● I would recommend the Search and Rescue
● I would recommend the same activities that were done because, they helped me understand some problems I had trouble with.
● Maybe more questions and different things like regular solving rather than only graphing.
● Have more graphs set up so it’s not crowded **
● I would recommend doing the same activities because they were very helpful
● The game was a bit confusing
Appendix L

California State University
Sacramento

Targeted Project
### 1. Brief summary of the project and its goals (Comprehensive Projects should include attention to the Required Features in the RFP and on the initiative website at: teachingcommons.cdl.edu/CSUNewGen/new_gen_grants. Targeted Projects should include attention to advancing the new standards and K-12 partnerships.) (1/2 - 1 page)

Our Targeted Project is focused on aligning 4 target courses (Chem106, Bio 7, Phys 107 and Geo 8 - required in the Liberal Studies major) to the new standards (California Content Standards, Next Generation Science Standards, and CA ELD standards). This includes adding new content (especially engineering content) to the courses and significantly changing the pedagogy and structure of the courses to integrate identified disciplinary practices and cross cutting concepts. Our project will also produce a curriculum alignment matrix between the target courses and the math and science methods courses (EDTE314, EDTE316) for our Multiple Subject Teacher Preparation program. This will operationalize a coordinated and cohesive vision for standards-aligned science education along the learning-to-teach continuum (subject matter, teacher preparation for multiple subject candidates) on our campus. Project participants include faculty in the biology, chemistry, physics, geology, environmental science, math education, science education and literacy as well as K-12 partners who teach in our local schools and are a part of our science education professional learning communities.

### 2. Description of key activities and strategies accomplished against the timeline, including any partner contributions (This may be based on implementation milestones on your Tracking Your Progress form.) (1-2 pages)

Our work is organized around a faculty learning community (FLC) that includes 15 faculty, from the disciplines listed above. This group met twice in Spring 2015, where the focus of the meetings was to become familiar with the content of the new standards and to identify the changes needed to align the target courses to the new standards. Our spring 2015 meetings included several simulations, where the FLC facilitators led the group through standards-aligned activities that allowed participants to experience first-hand the practices and conceptual learning envisioned by the standards. These authentic experiences then generated rich discussion about the shifts needed for the target courses. A considerable amount of collaboration occurred, as faculty from across disciplines interacted and, especially, as teacher preparation faculty shared with discipline faculty information about the local school context and the challenges and opportunities teachers face with implementing the new standards.

A sub-group of 10 faculty from the FLC were able to participate in the three-day Summer 2015 Curriculum Workshop. This workshop also included 7 K-12 teacher leaders who have been active in our science education professional learning communities (supported by the Math and Science Education Center at Sacramento State); a subset of this teacher leader group also serves mentor teachers to candidates in our teacher preparation program.
The Curriculum Workshop featured two key activities: (a) continued “experiences” with standards-aligned science learning where participants engaged in science tasks that promoted model-based reasoning, structured discussions, and the integration of cross-cutting concepts and (b) focused work on identifying possible target course revisions (new readings, new standards-aligned activities, revised lab manuals, etc.), with technical support from the K-12 teacher leaders. Each faculty member left with a work plan for revising his/her course syllabus.

In Fall 2015 the FLC will meet three times. The first meeting occurred on October 19th and the second meeting is scheduled for November 2nd. Both of these meetings are focused on individual faculty showcasing the changes made to their course syllabi and the “internal” pilot testing they are (or will be) conducting on new activities/content for their course. At our October 19th meeting, three faculty showcased course changes. Three additional faculty are scheduled to present their changes at the November 2nd meeting. We are also working on identifying innovations that would be appropriate for an “external” pilot test, in the classrooms of our K-8 partners. Such innovations include new lab activities, new probes, and new discussion prompts. These “external” pilot tests will occur after the internal pilot tests have concluded, likely in late Fall 2015 and early Spring 2016. The “external” pilot tests will inform any final revisions to the course syllabi, all of which are envisioned to be completed by Spring 2016, with implementation in Fall 2016.

3. Analysis of projected outcomes and impacts as compared to intended outcomes and impacts (You may use your Tracking Your Progress form to analyze your potential to meet your short term and long term projected outcomes.) (1/2 -1 page)

Please see Progress Report on Timeline and Management Plan document below.

4. Summary of formative evaluation results, including evaluation instruments and metrics (Attach any available data and copies of instruments.) (1/2 -1 page)

Thus far, there is one piece of formative evaluation data – the “ticket out the door” from our summer 2105 Curriculum Workshop. The information from this exercise is below. It has been used by the Project Director to structure the fall 2015 FLC meetings. In cases where the participant indicated a need for other resources, the Project Director worked with that participant to identify other sources of support (our Math and Science Education Center, for example). In addition, the draft syllabus content analysis rubric is also included below.

On November 2, the FLC met to discuss evaluation activities. Each instructor will submit syllabi from Fall 2014 through Spring 2016, which will be analyzed by the project evaluator using the rubric included in this report. This content analysis will include the 4 target courses and several other courses since the instructors teach more than one science course and are using the FLC to make changes across the courses they teach. This represents an unintended consequence in that science majors and students in the subject matter waiver programs will now have the opportunity to experience standards-aligned instruction.

In addition, all instructors of target courses and instructors of science education courses will conduct an evaluation of selected new material in their revised courses. Our original evaluation plan included pre/post measures, but in most cases, the course changes are significant enough that there is not sufficient overlap or commonality in assignments to implement a pre/post analysis. Instead, each instructor has agreed to survey the students after they have completed an activity that emerged from the FLC work. For most of our instructors, this will mean that after a lab or an activity or a probe (which will incorporate disciplinary practices or new engineering content or dialogue protocols or model building, etc.), students will be asked to provide feedback on that experience.
Finally, 3 of the 4 target courses and both of the science education courses will engage in "external" pilot tests of a new course activity (or activities). These evaluation activities will occur late in fall 2015 and early in spring 2016.

5. Explanation of major risks/challenges inhibiting implementation of key activities and strategies undertaken to mitigate them (Your Tracking Your Progress form may be helpful.) (1/2 -1 page)

This project has benefitted from excellent engagement by all of our FLC participants who have demonstrated genuine interest in the new standards, learning from their colleagues and K-12 partners, and improving the learning to teach continuum on our campus (subject matter, teacher preparation for multiple subject candidates). The work appears to be progressing with efficiency and all FLC participants will have initial revisions to their course syllabi completed by the end of the Fall 2015 semester. The work is off the timeline in terms of the “external” field tests, which also happen to be a key step to finalizing course changes. This is primarily due to differences between what was initially envisioned for the timeline and the realities that emerged. It was not possible for the FLC participants to fully identify the primary course changes until after the summer 2015 Curriculum Workshop where their collaborations with our K-12 partner teacher leaders occurred and significantly informed their thinking about course revisions. These collaborations were very fruitful and informative and supported the faculty in concretely identifying the necessary changes to their courses, which are in the process of being refined now, during the fall 2015 semester. Absent specific activities for external pilot testing, this part of the course revision process has been delayed while faculty finalize the new course content that is testable (activities, labs, tasks, prompts, etc.). The Project Director and other members of the FLC have a very strong network of K-12 partners and we do not anticipate there will be any challenges associated with the external field test of course activities, once they are fully ready. We anticipate the external field testing will happen in late Fall 2015 or early Spring 2016. The evaluation activities have also been hampered by the reassignment of the evaluator; the initial evaluator has taken a medical leave and will be unable to complete those tasks. The new evaluator is familiar with the project and the evaluation activities.
### Preparing a New Generation of Educators for California:
PROGRESS REPORT - Timeline and Management Plan
Sacramento State University

<table>
<thead>
<tr>
<th>Start/End Dates</th>
<th>Activity</th>
<th>Measurable Outcome(s)</th>
<th>Status as of November 2, 2015</th>
</tr>
</thead>
</table>
| By February 27, 2015 | • Recruit faculty participants for FLC  
• Recruit teachers to field test exemplar lessons in fall 2015  
• Recruit teacher and engineering FLC consultants  
• Develop FLC programming (materials, deliverables, timeline, etc.) | PROJECT Deliverables:  
• 10 FLC participants  
• 10 teachers to field test exemplars  
• 2 teacher leader consultants  
• 1 Engineering faculty consultant  
• FLC syllabus fully developed | Completed: 15 FLC participants (includes 1 Engineering faculty participant) and 7 teacher leader consultants  
At the October and November FLC meetings, participants are sharing their exemplars. Once the content and structure of these exemplars are presented, the Project Director will be able to recruit teachers to field test the exemplars. The field testing should occur in late Fall 2015 and early Spring 2016. |
| By March 30, 2015 | • Convene FLC for orientation meeting  
• Initiate timeline and key activities | FLC participants identify at least 3 areas of possible alignment between NGSS, CCSS, and ELD standards and their target courses | Completed |
| March 2 – May 29, 2015 | • Implement FLC activities | FLC participants identify at least two assignments, two activities, and up to 3 readings to change in order to align to new standards  
FLC participants increase their knowledge of K-8 contexts for science education  
FLC participants increase their knowledge of how to integrate engineering practices, NGSS content, and ELD practices into their course and course assignments and activities | Identification of changes to courses: Completed, though the nature of the course changes is not the same for each course.  
Increased knowledge of K-8 contexts: Completed, teacher consultants were invaluable partners in our Summer 2015 Curriculum Workshop.  
Increased knowledge of new standards: On-going. Cross-disciplinary FLC with K-8 teacher participation has been very productive and participants have identified many intellectual resources as a result. |
<table>
<thead>
<tr>
<th>Start/End Dates</th>
<th>Activity</th>
<th>Measurable Outcome(s)</th>
<th>Status as of November 2, 2015</th>
</tr>
</thead>
</table>
| By April 30, 2015 | Develop evaluation instruments                                           | • Syllabus content analysis rubric developed  
• Target course attitudes survey developed  
• CSUS student work rubric developed  
• K-8 student engagement observation protocol developed  
• K-8 student work rubric developed | • Syllabus content analysis rubric drafted  
• All other evaluation items are under development. |
| By May 8, 2015  | Administer survey to existing undergraduates Collect work samples from target courses | • 75% response rate on survey (“pre” measure)  
• 90% work samples collected from at least one section of each target course (“pre” measure) | • Work samples have been collected but the nature of the course changes does not lend itself well to pre/post analysis. Instead, each instructor will survey students after they have completed a task or assignment that was produced through the FLC curriculum workshop process. |
| April 1-May 29, 2015 | Collect select course syllabi from fall 2011 through fall 2014          | • 100% course syllabi collected and analyzed  
• Extent of NGSS and ELD alignment identified (“pre” measure) | Course syllabi collected for Fall 2014 and Spring 2015, alignment analysis not yet conducted. Collecting syllabi from semesters earlier than Fall 2014 was not viewed as being very informative in the long run. |
| May 1 – June 12, 2015 | Engagement study of students in participating teacher classrooms       | • Extent of student engagement identified (“pre” measure) | Not completed |
| March 1 – June 30, 2015 | Develop summer workshop content and activities                        |                                                                                                                                  | Completed |
| July or August 2015 | 2015 Summer Workshop                                                   | • Participants create exemplar lessons aligned to NGSS, CCSS and ELD standards  
• Participants finalize redesigned course syllabi in preparation for pilot testing in fall 2015  
• Participants create science curriculum map with articulation between science content courses and teacher preparation science methods course | Redesigned course syllabi completed, exemplars (class sessions, labs, dialogue protocols, probes, etc.) have been identified and are being internally pilot tested now with CSUS students. But course syllabi will not be finalized until after “external” pilot tests in K-8 schools are conducted.  
Curriculum map will be created once final course syllabi are prepared. (Spring 2016) |
<table>
<thead>
<tr>
<th>Start/End Dates</th>
<th>Activity</th>
<th>Measurable Outcome(s)</th>
<th>Status as of November 2, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 1 – October 30, 2015</td>
<td>Implement exemplar lessons for field testing</td>
<td>• 100% of participating teachers implement the exemplar lessons, collect associated student work, and complete lesson reflection • 80% of participating teachers rate lessons as “very effective”</td>
<td>Will be completed in Spring 2016</td>
</tr>
<tr>
<td>September 1 – October 30, 2015</td>
<td>Engagement study of students in participating teacher classrooms</td>
<td>• Extent of student engagement identified (“post” measure) • 30% increase in student engagement</td>
<td>Will be completed in Spring 2016</td>
</tr>
<tr>
<td>November 2 – December 11, 2015</td>
<td>Revise course syllabi based on field test data</td>
<td>• 100% of target courses aligned with NGSS, CCSS, and ELD standards • 100% of target courses and elementary science methods syllabi revised to incorporate exemplary lessons</td>
<td>Will be completed in Spring 2016</td>
</tr>
<tr>
<td>January – May 2016</td>
<td>Initiate campus course approval process • FLC members continue target course refinement process</td>
<td>100% of courses approved</td>
<td>None of the FLC work will result in “new” courses. Thus, the formal course approval process is not needed. The Project Director and FLC participants will work with individual departments to adopt the new target course syllabus as the common syllabus across all sections of the target course.</td>
</tr>
<tr>
<td>April 2016</td>
<td>Administer survey to undergraduates in transformed courses</td>
<td>• 30% increase in positive student responses</td>
<td>Not yet initiated but on track to complete this task as envisioned</td>
</tr>
<tr>
<td>April 2016</td>
<td>Collect and analyze syllabi for fall 2015, spring 2016</td>
<td>Significant changes in course content, strong alignment to NGSS, CCSS and ELD standards</td>
<td>Not yet initiated but on track to complete this task as envisioned</td>
</tr>
<tr>
<td>May 2016</td>
<td>• Finalize course syllabi based on spring 2016 instructor and student feedback • Departments adopt new course syllabi</td>
<td>Revised syllabi used by relevant departments for all sections of target courses in fall 2016</td>
<td>Not yet initiated but on track to complete this task as envisioned</td>
</tr>
<tr>
<td>Faculty Member</td>
<td>Alignment Goals</td>
<td>Next Steps</td>
<td>Resources Needed</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------</td>
<td>------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Hui Ju Huang</td>
<td>Integrate engineering, asking questions, defining programs, investigations, explanations, solutions</td>
<td>Create unit, teach it and have candidates reflect</td>
<td>Electric circuit components</td>
</tr>
<tr>
<td>Cathy Ishikawa</td>
<td>Incorporate model-based reasoning for stream chemistry unit</td>
<td>New prompts &amp; handouts, revise lecture, rework learning outcomes, organize materials</td>
<td>28 hours in a day ☺</td>
</tr>
<tr>
<td>Jennifer Lundmark</td>
<td>More cause &amp; effect with data sets, interrupted cases, more metacognition</td>
<td>Identify specific data sets, track effectiveness of changes</td>
<td>Kind words</td>
</tr>
<tr>
<td>Barb Munn</td>
<td>Align Geo8T manual to NGSS</td>
<td>Incorporate more NGSS practices, reorganize course content</td>
<td>Geo8T manual aligned to NGSS</td>
</tr>
<tr>
<td>Jenna Porter</td>
<td>Integrate science and engineering practices into course</td>
<td>Unit outline for circuit lessons</td>
<td>Materials</td>
</tr>
<tr>
<td>Adam Rechs</td>
<td>Align Bio 7 and lab to NGSS – esp engineering practices.</td>
<td>Match Bio 7 learning outcomes with NGSS, address gaps and create activities for gaps</td>
<td>Assistance interpreting NGSS, assistance translating activity for university students to the K-8 context</td>
</tr>
<tr>
<td>Amy Wagner</td>
<td>Integrate NGSS practices and cross-cutting concepts</td>
<td>Create formal assignment for Geol 8 instructors, create activity</td>
<td>Some supplies</td>
</tr>
</tbody>
</table>
New K-12 Content Standards – Course Syllabus Alignment Rubric for Target Science Courses
Sacramento State Course (number and title): __________________________________

Degrees of Alignment and Evidence:
- Not present
- Present: quantify and specify by course component (reading, activity, assignment, etc.)
- Fully developed: quantify and specify by course component (reading, activity, assignment, etc.)

<table>
<thead>
<tr>
<th>Standards Elements</th>
<th>Degree of Alignment: Spring 2015 and before</th>
<th>Degree of Alignment: Fall 2015 and after</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGSS: Disciplinary Core Ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify as appropriate to the target course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify as appropriate to the target course</td>
<td></td>
<td></td>
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<tr>
<td>(add rows as needed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGSS: Cross Cutting Concepts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Patterns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cause and effect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Scale, proportion, quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Systems and system models</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Energy and matter: flows, cycles and conservation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Structure and function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Stability and change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGSS: Disciplinary Practices (*denotes overlap with CCSS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Asking questions (for science) and defining problems (for engineering)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Developing and using models*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Planning and carrying out investigations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Analyzing and interpreting data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Using mathematics and computational thinking*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Constructing explanations (for science) and designing solutions (for engineering)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Engaging in argument from evidence*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Obtaining, evaluating, and communicating information*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standards Elements</td>
<td>Degree of Alignment: Spring 2015 and before</td>
<td>Degree of Alignment: Fall 2015 and after</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Focus on Language Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Interacting in meaningful ways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Deepening understanding about how disciplinary language works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Building disciplinary language skills (reading, writing and speaking)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall summary of changes to course syllabus:**

**Opportunities for further course alignment:**
Appendix M

San Jose State University

Targeted Project
### Brief summary of the project and its goals

<table>
<thead>
<tr>
<th>Goal 1 (Transform Elementary Teacher Preparation in Mathematics)</th>
<th>Objectives:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redesign SJSU CCTC-aligned Multiple Subject Teacher Credential Program (MSCP) to include and address HLP; co-teaching; CCSS-M, and ELDS; and the needs of EL.</td>
<td>(1.1) Develop HLP/EL framework and teaching observation tool. (1.2) Redesign MSCP mathematics-related courses to integrate HLP/EL framework and observation tool. (1.3) Develop Web-based representations (including classroom video) of HLP/EL-framework teaching of CCSS-M/ELDS in HLPCA coteaching clinical settings for use in MSCP mathematics-related curriculum and HLPCA PD.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 2 (Establish the SJSU HLPCA for Clinical Preparation, Professional Development, Retention, and Sustainability)</th>
<th>Objectives:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a supportive, collaborative school-based professional learning community in clinical coteaching contexts to develop mentor teachers (MT), teacher candidates (TC), and university supervisors who can skillfully implement and help sustain and institutionalize HLPCA teaching of CCSS-M/ELDS content for all students, especially EL.</td>
<td>(2.1) Institutionalize the HLPCA to support and sustain regular interactions and planning among stakeholders on matters pertaining to teaching the content and practice standards of the CCSS-M/ELDS to all students, especially EL. (2.2) Increase all concerned stakeholders’ knowledge of effective HLPCA teaching in math and ways it can be skillfully implemented in a clinical coteaching context by providing HLPCA PD to enhance teaching and mentoring skills in math.</td>
</tr>
</tbody>
</table>
2. **Description of key activities and strategies accomplished against the timeline, including any partner contributions** (This may be based on implementation milestones on your Tracking Your Progress form.) (1-2 pages)

- The High Leverage Practice/English Learner (HLP/EL) framework has been developed (see Attachment 1: HLP/EL Framework). (Objective 1.1)
- Revision of the mathematics curriculum and methods course, which is taught by the Math Consultant, is in progress. The course addresses HLP 1-13, and teacher candidates practice the HLP during class meetings. (See Attachment 2: Syllabus Mathematics Curriculum and Methods Fall 2015.) (Objective 1.2)
- A coteaching pair (HLPCA mentor teacher—MT—and teacher candidate—TC) have agreed to serve as the pilot to develop a Web-based representation (including classroom video) of HLP/EL-framework teaching of CCSS-M/ELDS in their HLPCA coteaching clinical setting for use in future MSCP mathematics-related curriculum & HLPCA PD. Production will commence after the TC has submitted the PACT in mid November. (Objective 1.3)
- A meeting has been held with the new FMSD Superintendent, Juan Cruz. (The HLPCA was conceptualized in consultation with his predecessor, John Porter, who has since retired.) (Objective 2.1)
- Identification of members of the HLPCA Advisory Board and HLPCA Steering Committee has begun. (Objective 2.1)
- Three HLPCA PD workshops have been scheduled with coteaching MT-CT pairs; two of the PD workshops already have been held. (Objective 2.2)

3. **Analysis of projected outcomes and impacts as compared to intended outcomes and impacts** (You may use your Tracking Your Progress form to analyze your potential to meet your short term and long term projected outcomes.) (1/2 -1 page)

The HLPCA had a delayed start as explained below in section 5. Nevertheless, three outcomes have been achieved on schedule: (1) HLP/EL framework development (Objective 1.1), (2) mathematics curriculum and methods course revision (Objective 1.2), and (3) delivery of professional development to coteaching mentor teachers and teacher candidates (Objective 2.2). Other intended outcomes have been delayed but are still projected to be achieved as explained below in section 5. The only outcome data presently available are in the mathematics curriculum and methods course syllabus (Attachment 2), which indicates the HLP 1-13 are being addressed in the course throughout the semester. Subsequent outcome data will come from teacher candidates’ evaluations of the mathematics methods course and coteachers’ evaluations of the HLPCA PD workshop series.

4. **Summary of formative evaluation results, including evaluation instruments and metrics** (Attach any available data and copies of instruments.) (1/2 -1 page)

The attached High Leverage Practices By HLPCA Professional Development Workshop document indicates which HLP have been addressed in the two PD workshops held to date. (See Attachment 3). While HLP 9 (Recognizing and identifying common patterns of student thinking in a content domain) is the most frequently requested HLP to have addressed, the requests span 14 of the 19 HLP. Because SJSU is part of the CSU ATLAS pilot, it is possible to check the ATLAS library to see
if there are any mathematics videos related to any of the more frequently requested HLP. Also attached is a copy of the qualitative feedback form (Attachment 4) distributed at each PD workshop and the HLP Self-Appraisal (Attachment 5) that was distributed at the second PD workshop. Finally, as stated previously, the attached syllabus for the mathematics curriculum and methods course indicates that HLP 1-13 are addressed in the course. The instructor reports that teacher candidates practice the HLP during class meetings. We are considering ways to collect related data before the end of the semester.

5. Explanation of major risks/challenges inhibiting implementation of key activities and strategies undertaken to mitigate them (Your Tracking Your Progress form may be helpful.) (1/2 -1 page)

We did not receive our NGEI funds until Summer 2015. In addition, the Multiple Subject Credential Program (MSCP) at SJSU has been restructured, beginning AY 2015-2016. Finally, the departments in the SJSU Lurie College of Education (LCOE) are considering restructuring. Those three facts have contributed to the timing of HLPCA activities.

- Development of the lesson planning instrument (LPI) and teaching observation tool (TOT) have been delayed. The TOT will be based on the Multiple Subject Credential Program lesson plan guidelines/template (lesson planning instrument—LPI), which had been scheduled for department-level review in September. However, department meeting time has been consumed with discussions related to LCOE restructuring. Consideration of the LPI has been rescheduled to November. As department faculty consider the LPI for approval, the Project Director will propose any necessary revisions to incorporate High Leverage Practice (HLP) and English learner (EL) components. Based on the approved LPI, the Project Director will create a draft version of the TOT and refine it in consultation w/ HLPCA supervisors and the Math Consultant. (Objective 1.1)

- As a result of the delayed development of the LPI and TOT explained above, use of the LPI and TOT in the field by TC, MT, and supervisors has been delayed and likely will be postponed until the spring 2016 semester. (Objective 1.2)

- Although potential members of the advisory board and steering committee have been identified, neither group has been convened. Each group will meet either before the end of the fall 2015 semester or in early January in time to successfully roll out the HLPCA plan for the spring 2016 semester. (Objective 2.1)

List of Attachments
1. HLP/EL Framework
2. Syllabus Mathematics Curriculum and Methods Fall 2015
3. High Leverage Practices By HLPCA Professional Development Workshop
4. Co-Teaching Meeting Participant Response Sheet
5. HLP Self-Appraisal
Appendix M-1

High Leverage Practice and Content Academy Framework
### High Leverage Practice and Content Academy (HLPCA) HLP/EL Framework

<table>
<thead>
<tr>
<th>High Leverage Practice (HLP)</th>
<th>English Learner (EL) Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contextualization</td>
</tr>
<tr>
<td>(1) Explaining core content</td>
<td></td>
</tr>
<tr>
<td>(2) Posing questions about content</td>
<td></td>
</tr>
<tr>
<td>(3) Choosing and using representations, examples, and models of content</td>
<td></td>
</tr>
<tr>
<td>(4) Leading whole class discussions of content</td>
<td></td>
</tr>
<tr>
<td>(5) Working with individual students to elicit, probe, and develop their thinking about content</td>
<td></td>
</tr>
<tr>
<td>(6) Setting up and managing small-group work</td>
<td></td>
</tr>
<tr>
<td>(7) Engaging students in rehearsing an organizational or managerial routine</td>
<td></td>
</tr>
<tr>
<td>(8) Establishing norms and routines for classroom discourse and work that are central to the content</td>
<td></td>
</tr>
<tr>
<td>(9) Recognizing and identifying common patterns of student thinking in a content domain</td>
<td></td>
</tr>
<tr>
<td>(10) Composing, selecting, adapting quizzes, tests, and other methods of assessing student learning of a chunk of instruction</td>
<td></td>
</tr>
<tr>
<td>(11) Selecting and using specific methods to assess students' learning on an ongoing basis within and between lessons</td>
<td></td>
</tr>
<tr>
<td>(12) Identifying and implementing an instructional strategy or intervention in response to common patterns of student thinking</td>
<td></td>
</tr>
<tr>
<td>(13) Choosing, appraising, and modifying tasks, texts, and materials for a specific learning goal</td>
<td></td>
</tr>
<tr>
<td>(14) Enacting a task to support a specific learning goal</td>
<td></td>
</tr>
<tr>
<td>(15) Designing a sequence of lessons on a core topic</td>
<td></td>
</tr>
<tr>
<td>(16) Enacting a sequence of lessons on a core topic</td>
<td></td>
</tr>
<tr>
<td>(17) Conducting a meeting about a student with a parent or guardian</td>
<td></td>
</tr>
<tr>
<td>(18) Writing correct, comprehensible, and professional messages to colleagues, parents, and others</td>
<td></td>
</tr>
<tr>
<td>(19) Analyzing and improving specific elements of one's own teaching</td>
<td></td>
</tr>
</tbody>
</table>
Appendix M-2

Syllabus Math Curriculum Methods
Fall 2015
Contact Information

Instructor: Patricia Swanson
Office Location: SH 341
Telephone: (408) 924-3769
Email: patricia.swanson@sjsu.edu
Office Hours: Tues. 5-6; Wed. 11-1
Class Days/Time: Thursday 9:00 – 11:45 p.m.
Classroom: SH 334

Course Materials Available on canvas @ sjsu.instructure.com

Course materials such as syllabus, handouts, assignment instructions, etc. can be found on Canvas @ sjsu.instructure.com. Support is available for you as you begin using Canvas. You can find detailed tutorials discussing the different components of Canvas at the following links: http://guides.instructure.com/ and http://www.sjsu.edu/at/ec/canvas/

Course Description

The course is built on the concept of pedagogical content knowledge – the blending of content knowledge for teaching, pedagogical expertise, and knowledge of students. The course is designed to develop your pedagogical content knowledge in mathematics. To this end critical mathematics content and a wide range of pedagogical strategies pertinent to the teaching of mathematics in academically and linguistically diverse classrooms will be modeled and practiced. Within the context of the “balanced approach” advocated by the state and rigorous mathematics content outlined by Common Core standards and mathematical practices, this course focuses on enabling you to enhance all students’ access to and interest in mathematics, enabling them learn mathematics well. Consequently, a primary goal of this course is to increase your interest in and understanding of mathematics, such that your knowledge and enthusiasm for the subject infuses your classroom.

Two key features of effective mathematics teaching will be embedded throughout the course: developing students’ academic language within
Language is an essential tool enabling students to both learn and do mathematics. In this course we will focus on simultaneous teaching of mathematics content and the language of mathematics. Practical strategies for teaching vocabulary in context, using language frames, structuring group and paired work, facilitating mathematical discussions, and efficiently using manipulative materials will be addressed for their potential to foster conceptual understanding and the use of academic language in mathematics.

Finally, mathematics, and how it is taught, has the power to shape students’ self-efficacy, resiliency, and beliefs about themselves and their intelligence. In no other subject is the interaction of social-emotional factors so tied to learning and disposition to learn. In this course we will examine the social and emotional dimensions of teaching and learning mathematics and develop strategies to enhance students’ productive disposition towards learning and doing mathematics.

**Course Goals & California Commission on Teacher Credentialing Teacher Performance Expectations (TPE’s)**

Students will demonstrated an understanding of selected research and learning theories pertinent to mathematics education. (TPE 4 Making Content Accessible;
Students will demonstrate both conceptual understanding and the ability to plan and teach essential mathematics concepts and critical content for K-8 students’ mathematical development. (TPE1A Subject Specific Pedagogical Skills; TPE 9 Instructional Planning)

Students will demonstrate the ability to strategically integrate pedagogical strategies, curricular activities, and management systems introduced in class with the existing mathematics programs used by school districts in our service region. (TPE 4 Making Content Accessible)

Students will demonstrate the ability to design and implement mathematics lessons reflecting a variety of pedagogical strategies and designed to enhance access to learning in academically and linguistically diverse classrooms. (TPE 4 Making Content Accessible; TPE 5 Student Engagement; TPE 6A&B Developmentally Appropriate Practices K-8; TPE 7 Teaching English Learners)

Students will develop classroom organizational systems and instructional plans to foster cooperative skills, organize and maintain efficient use of manipulatives, and enhance meaningful communication in the mathematics classroom. Specific emphasis will be placed on materials, methods, and instructional strategies that provide second language learners with access to grade appropriate mathematics content while fostering the development of both oral and written English language skills. (TPE 4 Making Content Accessible; TPE 5 Student Engagement; TPE 7 Teaching English Learners; TPE 11 Social Environment)

Students will examine strategies for teaching and utilizing reading and writing in the content area of mathematics; using technology; and teaching both study skills and critical thinking skills to academically and linguistically diverse students. (TPE 4 Making Content Accessible)

Students will develop strategies fostering social and emotional learning skills within the context of teaching and learning mathematics. Specifically, students will learn to 1) foster self-awareness and resiliency when faced with challenging mathematics tasks 2) teach norms for group interaction and mathematical discourse, 3) model a growth mindset, develop multidimensional mathematics tasks, and recognize a variety of intellectual aptitudes relevant to doing mathematics, and 4) teach study skills that promote goal setting, planning, and self regulation in the mathematics classroom. (TPE 6 Developmentally Appropriate Teaching Practices; TPE 11 Social Environment)
Students will design a unit of instruction in mathematics integrating course content with a state adopted textbook appropriate to their anticipated grade level. (TPE 9 Instructional Planning; TPE 10 Instructional Time)

**High Leverage Practices:**
The following “high leverage” practices (Ball, 2011) will be taught and practiced throughout the course:

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<tbody>
<tr>
<td>1</td>
<td>Explaining core content</td>
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<td>2</td>
<td>Choosing and using representations, examples, and models of content</td>
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<td>3</td>
<td>Designing a sequence of lessons on a core topic</td>
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<td>4</td>
<td>Enacting a sequence of lessons on a core topic</td>
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<td>5</td>
<td>Using homework equitably</td>
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<td>6</td>
<td>Setting up and managing small-group work</td>
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<td>7</td>
<td>Using public recording (posters, whiteboard)</td>
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<td>8</td>
<td>Establishing norms and routines for classroom discourse and work that are central to the content</td>
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<td>9</td>
<td>Recognizing and identifying common patterns of student thinking in a content domain</td>
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<td>10</td>
<td>Identifying and implementing an instructional strategy or intervention in response to common patterns of student thinking</td>
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<td>11</td>
<td>Leading a productive whole class math discussion</td>
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<tr>
<td>12</td>
<td>Teaching and using a academic language</td>
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<tr>
<td>13</td>
<td>Choosing, appraising, and modifying tasks, texts, and materials for a specific learning goal</td>
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An underlying focus of this course will be on preparing teachers to work in culturally, linguistically, and academically diverse classrooms.

**Required Texts/Readings**
Textbooks

CA edition (older edition 5th-7th or Student Value Edition ok)

Other Readings
Common Core State Standards Initiative. Standards for Mathematical Practice and The Standards >> Mathematics (available online @ www.corestandards.org/the-standards/mathematics)

All other readings, required or suggested, may be accessed through canvas @ sjsu.instructure.com

Assignments and Grading
SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on.

Course Requirements and Evaluation Points Due
• Active Informed Participation (discussion/activities) 5 ---
• Reading Responses (4 points each) 20 ---
• Expert Group Individual Exam 5 10/15
• Lesson Plan 15 2 wks before presentation
• Mathematics Unit Outline (signature assignment) 40 12/3
• Final Examination 15 12/10

Grading
90 -100 points A
80 - 89 points B
70 - 79 points C

Note: Assignments that are turned in late, without prior arrangement with instructor, will have points deducted (equivalent to one grade level).

For information on students’ rights, responsibilities and grievance procedures refer to “Policies and Procedures” in the University Schedule of Classes.
University Policies

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latdrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Consent for Recording of Class and Public Sharing of Instructor Material

University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor’s permission to record the course.

- Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.
- Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.

Academic Integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Integrity Policy S07-2 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an
appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the [Disability Resource Center](http://www.drc.sjsu.edu/) (DRC) at http://www.drc.sjsu.edu/ to establish a record of their disability.

Note: The following Schedule provides a preliminary outline of topics and assignments. This schedule may be modified by the instructor as necessary.

### EDEL 108D / Mathematics Seminar, Section 3

#### Fall 2015 Course Schedule

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<th>Course Schedule</th>
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**Required Reading and Viewing & Post Response #3:**

- a) Skim Chapter 8 in Elementary and Middle School Mathematics, “Developing Early Number Concepts and Number Sense,” pp. 128-147. Note how the chapter reflected today’s class on Early Number Concepts.
- b) read “The Tools of Classroom Talk”(Chapter 2) in Classroom Discussions (posted on CANVAS)
- c) Revisit the Burns tape we started in class, watching either Counting Stars or Geoboard Fractions:

  - Counting Stars / Base Ten System (Grade 2)  
    [https://www.youtube.com/watch?v=SdhnqnaUHF0](https://www.youtube.com/watch?v=SdhnqnaUHF0)
  
  - Geoboard / Fractions (grade 5-6)  
    [https://www.youtube.com/watch?v=TcpAXA0gERg](https://www.youtube.com/watch?v=TcpAXA0gERg)

Focus specifically on the teacher talk. Note the “talk moves” the teacher uses to elicit explanation and justification. How does she prompt students to listen and reflect on each other’s reasoning? Note (write) 10 examples of productive “talk moves” or prompts. How does the “teacher talk” in this vignette differ from the traditional IRE (initiation-response-evaluation) questioning pattern so often used with direct instruction in the United States?

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<thead>
<tr>
<th>4</th>
<th>9/10</th>
<th><strong>Place Value and Whole Number Computation</strong></th>
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<tr>
<td></td>
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<td>Counting, “10 makes 1 group,” Base 10 Representations</td>
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<td>* Counting collections (base 10 representations)</td>
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<td>*An Introduction to ‘Home-Made” Manipulatives and Base 10 Blocks: Counting and Trading</td>
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<td>Core Instructional Activity: Modeling Computational Algorithms</td>
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<td>CCSS practice 3 (reason abstractly and quantitatively)</td>
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<td>Modeling a Core Instructional Activity: Choral Counting</td>
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|     |      | “Counting by 15” Discussion: What mathematical practices are
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<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
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<td>embedded in this activity?</td>
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|      |       | **Required Reading and Viewing & Post Response #4**  
|      |       | View a 3rd grade example of Choral Counting by 200 starting at 5000 @ http://vimeo.com/44837082  
|      |       | What practices and math content are contained in this lesson? How is the lesson structured?  
|      |       | **Supplementary Reading:**  
| 5    | 9/17  | **Revisiting Place Value**  
|      |       | Jigsaw: Plan and Practice Choral Counting  
|      |       | **Understanding Operations**  
|      |       | The Meaning of the Equal Sign  
|      |       | Addition and Subtraction  
|      |       | Multiple problem representations: the story, the concrete representation, and the mathematical equation  
|      |       | CCSS practice 4 (model with mathematics) &  
|      |       | 7 (make use of structure)  
|      |       | **Required Reading:**  
|      |       | Begin reading your assigned *Expert Group Chapter* and choose a corresponding text chapter from the selections posted on canvas. This chapter will guide the content of your lesson plan and unit outline. Outline the key content presented in the text chapter.  
|      |       | **Supplementary Reading:**  
| 6    | 9/24  | **Understanding Operations: Multiplication**  
|      |       | Multiplication Structures: Using Children’s Literature  
|      |       | Common Core Problem Representations: the story, the concrete representation, and the mathematical equation  
|      |       | CCSS practice 4 (model with mathematics) &  
|      |       | 7 (make use of structure)  
|      |       | Representing multi-digit multiplication with the area model and base 10 blocks.  
|      |       | **Groupwork in Heterogeneous Classrooms: An Introduction to Complex Instruction: Multiplication Simulation**  
|      |       | Relational Equity in Multidimensional Classrooms (Boaler, Cohen, Lotan)  

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<td><strong>Required Reading and Viewing</strong></td>
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<td>View and do the problems posed by Jo Boaler modeling number talks at: <a href="http://youcubed.org/teachers/2014/from-stanford-onlines-how-to-learn-math-for-teachers-and-parents-number-talks">http://youcubed.org/teachers/2014/from-stanford-onlines-how-to-learn-math-for-teachers-and-parents-number-talks</a></td>
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<td>10/1</td>
<td><strong>Understanding Operations: Division &amp; Connections to Multiplication</strong></td>
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<td>Division Structures: Using Children’s Literature</td>
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<td>Linking to the Text</td>
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<td><em>Required Reading and Viewing &amp; Post Response #5</em></td>
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<td>Video Case: Ms. Cosio, Division lesson, Part 1 @ <a href="http://education.ucsc.edu/ellisa/case_studies/cosio-division-lesson.html">http://education.ucsc.edu/ellisa/case_studies/cosio-division-lesson.html</a></td>
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<td>Video Case “Classroom Participation Through the Eyes of Students” and Commentary pp. 78-90.</td>
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<td>Link to video: <a href="http://www.sjsu.edu/atn/services/webcasting/events/mathideas.html">http://www.sjsu.edu/atn/services/webcasting/events/mathideas.html</a></td>
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<td>8</td>
<td>10/8</td>
<td><strong>Strategies for Mastering Basic Facts</strong></td>
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<td>Helping Children Master Basic Facts (Chapter10)</td>
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<td>Guided Invention, Strategy Development, Strategy Selection:</td>
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<td>- Addition and Subtraction Strategies</td>
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<td>- Multiplication and Division Strategies</td>
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<td>*Managing Learning Goals (ZPD): Planning and Monitoring Goals</td>
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<td>Core Instructional Activity: Basic Facts</td>
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<td>* Jigsaw: Planning and Practicing Basic Fact Lessons</td>
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</table>
|      |      | *Required Reading:*
|      |      | O’Connell & San Giovanni, *Mastering Basic Facts* TBA |
|      |      | **Be sure you have read carefully your expert group chapter in Van de Walle in order to be ready for the Expert Group Exam 10/15.** |
|      |      | *Supplementary Reading:*
|      |      | Elementary and Middle School Mathematics, “Helping Children
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<td>10/15</td>
<td><strong>Expert Group Exam</strong></td>
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<td><strong>The Intersection of Language and Mathematics: Integers</strong></td>
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<td>Modeling a Classroom Lesson: Integer Story Problems</td>
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<td>Scaffolding Language and Content &amp; Contextualizing in Mathematics</td>
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<td>Writing Classroom Lesson Plans</td>
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<td><em>Required Reading and Viewing:</em></td>
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<td>Video Case: Mr Rubio’s Geometry lesson “Polygon Hunt” @ <a href="http://education.ucsc.edu/ellisa/case_studies/rubio-polygon1-lesson.html">http://education.ucsc.edu/ellisa/case_studies/rubio-polygon1-lesson.html</a></td>
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<td><em>Supplementary Reading:</em></td>
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<tr>
<td>10</td>
<td>10/22</td>
<td><strong>Understanding Fractions: A Critical Foundation for Algebra</strong></td>
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<td>Building Conceptual Understanding: Multiple Representations Building a Fraction Kit (Burns)</td>
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<td><em>Supplementary Reading:</em></td>
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<td><em>Measurement: Individual Lesson Plans Due</em></td>
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<td>11</td>
<td>10/29</td>
<td><strong>Understanding of Fractions and Linking to the Text: Unit Outline Exercise</strong></td>
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<td>Understanding Operations and Fractional Computation</td>
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<td>Literacy Development in Mathematics: Problem Posing, Problem Solving, Writing Story Problems</td>
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<td>Resilience: Using the Book Strategically</td>
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<td>Required Viewing</td>
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<td>Go to <a href="http://serpmedia.org/daro-talks/index.html">http://serpmedia.org/daro-talks/index.html</a> and listen to Phil Daro, one of the three authors of the CCSS mathematics standards discuss 1) Planning Chapters, not Lessons.</td>
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<td>What student textbook chapter will you use for your unit outline? Consider Daro’s question, “What is the math you want them to learn?” Review the chapter, stand back from the individual lessons and identify the mathematical understandings you want students to develop in the course of your 5-day unit.</td>
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<td>• Bring your textbook, or a copy of the chapter you plan to use to our next class</td>
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<td>Supplementary Reading:</td>
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<td>• Geometry: Individual Lesson Plans Due</td>
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<td>11/5</td>
<td>MEASUREMENT</td>
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<td>MEASUREMENT EXPERT GROUP LESSONS</td>
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<td>Developing Measurement Concepts (Chapter19)</td>
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<td>Sequence: Direct Comparison, Informal Units with Estimation, Formal Units with Estimation</td>
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<td>Deducing Area Formulas: “Use what you know to figure out what you don’t”</td>
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<td>Supplementary Reading:</td>
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<tr>
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<td>About Teaching Mathematics,” Measurement,” pp. 70-84.</td>
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<td>Recommended Reading:</td>
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<td>• Statistics and Data Analysis: Individual Lesson Plans Due</td>
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<td>13</td>
<td>11/12</td>
<td>GEOMETRY</td>
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<td>GEOMETRY EXPERT GROUP LESSONS</td>
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|      |      | Geometric Thinking and Geometric Concepts (Chapter 20)  
   |      | Scaffolding Language and Content in Mathematics  
   |      | * Shape Sorts to Deduce Properties and Classification Systems  
   |      | * Informal Deduction Using Geoboards  
   |      | **Recommended Reading:**  
   |      | **Supplementary Reading:**  
| 14   | 11/19 | **STATISTICS AND DATA ANALYSIS**  
   |      | **STATISTICS AND DATA ANALYSIS EXPERT GROUP LESSONS**  
   |      | Statistics and Data Analysis (Chapter 21)  
   |      | The Data Analysis Process  
   |      | Mathematics Applied: Interpreting Data  
   |      | **Supplementary Reading:**  
| 11/26 | 11/19 | **THANKSGIVING HOLIDAY**  
| 15   | 12/3  | **PART IV: ALGEBRA: PATTERNS AND FUNCTIONS**  
   |      | The Equal Sign and Concept of Balancing  
   |      | Multiple Representations of Functions  
   |      | *Differentiation in Action - The Menu Option: Patterns and Functions  
   |      |  
   |      | **Unit Outline Due**  
|      | 12/10 | **FINAL EXAMINATION**  

Appendix M-3

High Leverage Practice
by
HLPCA Professional Development Workshop
Compiled in the Dec. 1 column and below the table are the data from the response sheets and HLP self-appraisal distributed at the Oct. 6 PD. Each # in the Dec. 1 column indicates how many Ts have requested coverage of the HLP in the corresponding row. The Sep. 8 and Oct. 6 columns indicate the strategy that was used to demonstrate the HLP in the corresponding row. Coteaching MT and TC participated as students in the demonstration lessons.

<table>
<thead>
<tr>
<th>HLP</th>
<th>Sep. 8</th>
<th>Oct. 6</th>
<th>Dec. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Explaining core content</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(2) Posing questions about content</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>(3) Choosing and using representations, examples, and models of content</td>
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<td>2</td>
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<tr>
<td>(4) Leading whole class discussions of content</td>
<td></td>
<td>2</td>
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<tr>
<td>(5) Working with individual students to elicit, probe, and develop their thinking about content</td>
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<td>2</td>
<td></td>
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<tr>
<td>(6) Setting up and managing small-group work</td>
<td>Skill Builder: Rainbow Logic</td>
<td>1</td>
<td></td>
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<tr>
<td>(7) Engaging students in rehearsing an organizational or managerial routine</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(8) Establishing norms and routines for classroom discourse and work that are central to the content</td>
<td>Skill Builder: Rainbow Logic</td>
<td>Choral Counting</td>
<td></td>
</tr>
<tr>
<td>(9) Recognizing and identifying common patterns of student thinking in a content domain</td>
<td></td>
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<td>5</td>
</tr>
<tr>
<td>(10) Composing, selecting, adapting quizzes, tests, and other methods of assessing student learning of a chunk of instruction</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>(11) Selecting and using specific methods to assess students’ learning on an ongoing basis within and between lessons</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>(12) Identifying and implementing an instructional strategy or intervention in response to common patterns of student thinking</td>
<td></td>
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<tr>
<td>(13) Choosing, appraising, and modifying tasks, texts, and materials for a specific learning goal</td>
<td></td>
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<td>2</td>
</tr>
<tr>
<td>(14) Enacting a task to support a specific learning goal</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(15) Designing a sequence of lessons on a core topic</td>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>(16) Enacting a sequence of lessons on a core topic</td>
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<tr>
<td>(17) Conducting a meeting about a student with a parent or guardian</td>
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<tr>
<td>(18) Writing correct, comprehensible, and professional messages to colleagues, parents, and others</td>
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<tr>
<td>(19) Analyzing and improving specific elements of one’s own teaching</td>
<td></td>
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<td>2</td>
</tr>
</tbody>
</table>

Other requests for Dec. 1

(4) Provide more strategies and examples (how to incorporate w/ current curriculum)
(2) Video clip of math strategy in action in a classroom [will check ATLAS]
Giving math tests
More take-aways
More CT planning time
More sharing out of successes or learnings from using strategy in today’s (Oct. 6) session
Appendix M-4

Co-Teaching Meeting
Participant Response Sheet
Which parts of today’s meeting worked well? (+)

What could have been done differently? (Δ)

What would you like to experience at the next meeting?
Appendix N

Spring Meetings 2015:
Exploring New Standards with K-12 Partners
CCSS/NGSS/ELD Alignment and Calibration

In a productive meeting comprised of five full time faculty, three part time faculty, five representatives from K-12 partner districts, and eight university supervisors, the Professional Learning Community that assembled on April 11th made great strides toward the alignment of course expectations to CCSS and Next Generation Science and ELD standards.

The main purpose of the day was to calibrate – to ensure that all members had the same understanding and the same expectations for lesson design and delivery. Survey results listed the most impactful part of the workshop to be the modeling of a NGSS lesson imbedded with literacy strategies that evoke high-order thinking skills (9:00 to 10:00). Participants then walked through the metacognition of lesson development and practiced designing a lesson of their own – from the unwrapping of the standards to establishing the learning targets and developing a rubric, to selecting the supporting texts and literacy strategies (10:00 to 11:00). The focused discussion on the steps involved afforded an opportunity for us to evaluate the effectiveness of our instruction on the process itself (11:00 – noon). The afternoon session allowed the teams to meet separately – for those who dealt more immediately with instruction to evaluate and restructure courses to ensure the modeling of lesson design and authentic assessment – and for those who dealt more with field supervision to watch demonstration lessons and to calibrate expectations based on the TPE rubric. Survey results noted how pleased they were to have the opportunity to meet in these collaborative groups (noon – 2:00).

The following areas were posed for evaluation: 1. The workshop objectives were clear, 2. The workshop activities were relevant to my assignment, 3. I will be able to use what I learned in this workshop, 4. The facilitator was effective and communicated the objectives clearly. All areas of evaluation were given a total score of 4.92 out of 5.00.
CSUB
Teacher Education Department

Spring Workshop: The Common Core Instructional Shift

CSUB’s Teacher Education Department has developed a strong reputation for training and supporting candidates through changes in education. Join us for an opportunity to evaluate our courses and supervision practices through the critical lens of the CCSS and NGSS so that we can continue to produce well-equipped educators.

Click here to RSVP to Lori Phillips.

Saturday, April 11th
9:00 – 2:00 pm
Lunch Will Be Served
Room TBA
I have gained several new insights: the importance of developing skills that can be applied later in life; the importance of productive struggle; developing vocabulary by having students identify their own needs.

The morning session showed me how to align the standards based lesson design model to the common core SS. It is quite a challenge and I would love a follow up session. Also, collaboration is so important. It helps to dialog and communicate with other supervisors as you gain valuable insights.

The essential words T-Chart was a great way to teach reading of text, etc. This can be applied to any discipline.

New ways to look at student teacher performance; new look at lesson implementation: objective placement in lessons

Connecting CC transitions to what I'm doing with my teaching candidates: thinking through the beginning of retooling how planning is taught in pre-service: how to impact the CC standard and connect literacy to content areas: we need to build on this with all faculty/supervisors, conversation needs to be rich and focused.

How the other faculty on campus are implementing instruction on common core.

Implication of common core re teacher preparation, i.e. standards, methodology, assessment. ; aligning observations with TPE's - What are we looking for, what does "competent" look like?

Great examples of common core instruction and what it can look like in the classroom.

Common Core lesson design: modeled: develop a CC lesson; Rubrics used within lesson planning observations; hearing from different people/experiences.

Standards based on lesson plan design template; great perspective from school participants (K-12) on which activities in our credential program are relevant and valuable.

I have learned the power of collaboration all over again! Karen also taught me that the more planning you have behind the scenes, the better off your students will be.

Real world application for credential students: how common core can be applied to all subjects: teaching our teachers the way they'll be teaching their students.

I learned to instruct my courses in a more explorative manner. I am motivated to instruct more applicable strategies that are being used in schools. I learned more about standards based lesson design.

What information from today will immediately impact your teaching and/or supervision assignment?

I will use this information to reassess current teaching assignments so they align more closely with the objectives of the CCSS in developing skills that can be applied to multiple contexts.

The most important information from today that will immediately impact my supervision will be the use of the TPE rubric.

Slow readers may actually be doing several (3) rereads in the first read. Teach!
Including cooperating teacher more often following observations; in-depth look at TPE's

Really utilizing the TPE rubric during student teacher conferencing; reinforcing engagement for all students.

How I explain lesson plan development to interns/student teachers; How expectations are communicated to interns/student teachers.; motivation to continue to deepen understanding of common core & now NGSS development.

Changing vocabulary instruction to incorporate multiple media and more interactive strategies.

I will include a new activity where students will analyze class sets of data and work collaboratively to design common core lessons. I will investigate ways to tech content to our credential candidates in a less traditional way in order to model instruction that is more closely aligned with the common core.

I enjoyed and will implement the CC lesson design. Also, strategies to engage students to allow discussion.

I will remove the rigid scaffolding I have in place for all of my lessons. I will allow my students to think deeper instead of me doing all of the thinking for them.

Immediate feedback: collaborative groups: learning common core strategies by doing them.

Teaching through exploration.

Rate aspects of the workshop on a scale of 1-5 (5 being the best)

<table>
<thead>
<tr>
<th>The workshop objectives were clear</th>
<th>The workshop activities were relevant to my assignment</th>
<th>I will be able to use what I learned in this workshop</th>
<th>The facilitator was effective and communicated the objectives clearly</th>
</tr>
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<tbody>
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<tr>
<td>Rating</td>
<td>What improvements would you recommend for future workshops?</td>
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<tr>
<td>--------</td>
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<tr>
<td>5</td>
<td>I would like future workshops that can develop and build on today’s learning so that we can continue to look critically at our practices to constantly improve.</td>
<td></td>
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<tr>
<td>5</td>
<td>I thoroughly enjoyed today’s workshop and look forward to future workshops offered by the CSUB TED.</td>
<td></td>
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<tr>
<td>5</td>
<td>There is always room for growth, at the moment nothing is coming to me...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Warmer room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.92</td>
<td>I would like to see this as a series of workshops. It would be excellent to have additional funding from the Chancellor's Office to pay participants a small stipend for their service.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.92</td>
<td>You can’t improve perfection. Well done.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.92</td>
<td>It was informative, more time is always needed.</td>
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CSU CHANNEL ISLANDS
EVENT: STEMposium

A week long intensive workshop designed for K-8 teachers, future teachers, and CSU Faculty. Sessions were grade level specific focusing on the NGSS.

DATE: June 22-26, 2015, 8 am – 3 pm

LOCATION: University Charter Middle School at CSU Channel Islands, Camarillo, CA
Professional Development School Partner

PRESENTER DEMOGRAPHICS:

<table>
<thead>
<tr>
<th>TEACHER LEADERS – grade level presenters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CSU Faculty</td>
<td>David Philips, education faculty</td>
</tr>
<tr>
<td></td>
<td>Tabitha Swan Wood, science department</td>
</tr>
<tr>
<td>PDS Partner Schools</td>
<td>7 University Preparation School, University Charter Middle School teachers</td>
</tr>
<tr>
<td>Other schools</td>
<td>4</td>
</tr>
<tr>
<td>Retired Teachers</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>KEYNOTE PRESENTERS</th>
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<tbody>
<tr>
<td>CSU Faculty</td>
<td>Phil Hampton, CSUCI, science department</td>
</tr>
<tr>
<td></td>
<td>Ron Hughes, CSUB, education faculty</td>
</tr>
<tr>
<td>CSU Alumni/Students</td>
<td>Kathleen Holmgren, CAL Poly San Luis Obispo (3)</td>
</tr>
<tr>
<td></td>
<td>Student Panel CAL Poly San Luis Obispo</td>
</tr>
<tr>
<td>UCSB Faculty</td>
<td>Petra Van Koppen</td>
</tr>
<tr>
<td>University of LaVerne</td>
<td>David Hanley</td>
</tr>
<tr>
<td>Rice University, STEMscopes</td>
<td>Terry Talley</td>
</tr>
</tbody>
</table>

PARTICIPANT DEMOGRAPHICS and FEEDBACK: see attached

As backup we have included some of the data we collected as a part of an entry and exit survey. (see attachments) We will also have two ½ day follow-up days, during the school year, at which time we will ask participants to reflect on these same survey questions. We would be more than happy to share that data with you at your request. The goal of this STEMposium intensive and follow-up days is to reduce the anxiety K-8 teachers experience when attempting to teach science and equip them with tools to provide high quality science education that is also fun. Through this week long intensive, teachers were put in the role of learner and were asked to take risks, learn to fail, and work through the scientific process with a constructivist approach. On the last day of the five day intensive, 170 K-8 students were provided a day of STEM education given by the institute participants. This gave teachers the instant opportunity to practice what they had learned all week. Some of the participant feedback mentioned that they would have enjoyed more than one day with kids. This week truly met our expectations. The keynote presenters provided inspiration and education on career pathways for science. The teacher leaders provided science expertise and grade-level
expertise. We created a community of learners that we will continue to follow and support throughout this coming school year via our follow-up days and a website we created as a hub for communication and sharing amongst the participants and presenters.

<table>
<thead>
<tr>
<th>GRADES</th>
<th># of PARTICIPANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-3</td>
<td>34</td>
</tr>
<tr>
<td>4-5</td>
<td>19</td>
</tr>
<tr>
<td>6-8</td>
<td>10</td>
</tr>
<tr>
<td>High School</td>
<td>2</td>
</tr>
<tr>
<td>University</td>
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</table>

<table>
<thead>
<tr>
<th>YEARS OF TEACHING</th>
<th># of PARTICIPANTS</th>
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<tbody>
<tr>
<td>0-3</td>
<td>20</td>
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<td>4-9</td>
<td>10</td>
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<tr>
<td>10-15</td>
<td>11</td>
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<tr>
<td>15+</td>
<td>26</td>
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<table>
<thead>
<tr>
<th>CSU Faculty Participants</th>
<th>CSU Fullerton</th>
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</thead>
<tbody>
<tr>
<td>Kim Case</td>
<td></td>
</tr>
<tr>
<td>Christine Mayfield</td>
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</tbody>
</table>
California State University Presents
A FREE 5-day Summer Institute for
Ventura County K-MS Teachers in STEM

Experience the lessons yourself and then take home the plans to start implementing the materials right away.

June 22-26th 8:30-3:30pm
University Charter Middle School
700 Temple Ave
Camarillo, CA 93010

Hosted by CSU Channel Islands
in conjunction with University Charter Schools

In this training you will experience hands on lessons covering a variety of NGSS standards and how to modify them for different levels of students. In addition, you will take away the lesson plans and enough information to begin teaching the lessons as soon as you would like.

What you will do:

- Learn more about the 3 components of NGSS and how to transition your current lessons to the new standards.

- Attend daily workshops in a classroom setting where you will complete multiple hands-on NGSS lessons and activities as a student.

- Become inspired by and meet new colleagues who you can network and troubleshoot with during the schoolyear.

- Conclude the week by participating in a STEM event for local students in grades k-8 where you will get a chance to teach some of the STEM activities you learned in the institute.

- Participate in 2 Saturday (8-12pm) follow-up sessions during the 2015-16 school year

To register to be a participant Visit our webpage!
http://bit.ly/1bjhG0L

FOR MORE INFO CONTACT:

CHARMON EVANS
cevans@pvsd.k12.ca.us

ANNIE RANSOM
aransom@pvsd.k12.ca.us

805-482-4608

"It is a miracle that curiosity survives formal education"

— Albert Einstein

https://sites.google.com/a/universitycharterschools.org/vcstemposium
VC STEMposium  
Day 1, June 22, 2015

8:00—8:15  Sign-in
8:15—9:40  Welcome
Charmon Evans
Annie Ransom
Keynote—Dr. Terry Talley

9:40—9:50  Break
9:50—11:30 Breakout Sessions
K—A5  1st—A6
2nd—A7  3rd—A8
4th—D3  5th—D1
MS—Science Lab

11:30—1:00 Lunch

1:00—1:45  NGSS Overview
Nathan Inouye

1:45—2:00  Break

2:00—3:00  Breakout Session

Don’t forget Exit Survey

"If I have seen further than others, it is by standing upon the shoulders of giants." -Isaac Newton

WiFi
PVSDGuest

User Name:
Wirelessguest

Password:
8D@ysAweek

https://sites.google.com/a/universitycharterschools.org/vcstemposium/

---

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K—A5  1st—A6
2nd—A7  3rd—A8
4th—D3  5th—D1
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11:30—1:00 Lunch

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Nathan Inouye

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WiFi
PVSDGuest

User Name:
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Password:
8D@ysAweek

https://sites.google.com/a/universitycharterschools.org/vcstemposium/
VC STEMposium
Day 3, June 24, 2015

8:00—9:10 Welcome
Annie Ransom

Keynote—Dr. Petra Van Koppen
UCSB

9:10—9:20 Break

9:20—11:30 Breakout Sessions

11:30—1:00 Lunch

1:00—3:00 Breakout Session

Don’t forget Exit Survey

WiFi
PVSDGuest

User Name: Wirelessguest

Password: 8D@ysAweek

“To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science.”
Albert Einstein

https://sites.google.com/a/universitycharterschools.org/vcstemposium/
VC STEMposium
Day 2, June 23, 2015
8:00—9:10 Welcome
  Annie Ransom
  Keynote—Kathleen Holmgren
  Engineering Student Panel
  Cal Poly San Luis Obispo

9:10—9:20 Break
9:20—11:30 Breakout Sessions
11:30—1:00 Lunch
1:00—3:00 Breakout Session
Don’t forget Exit Survey

WiFi
PVSDGuest
User Name: Wirelessguest
Password: 8D@ysAweek

“Only two things are infinite, the universe and human stupidity, and I’m not sure about the former.” — Albert Einstein

https://sites.google.com/a/universitycharterschools.org/vcstemposium/

VC STEMposium
Day 2, June 23, 2015
8:00—9:10 Welcome
  Annie Ransom
  Keynote—Kathleen Holmgren
  Engineering Student Panel
  Cal Poly San Luis Obispo

9:10—9:20 Break
9:20—11:30 Breakout Sessions
11:30—1:00 Lunch
1:00—3:00 Breakout Session
Don’t forget Exit Survey

WiFi
PVSDGuest
User Name: Wirelessguest
Password: 8D@ysAweek

“Only two things are infinite, the universe and human stupidity, and I’m not sure about the former.” — Albert Einstein

https://sites.google.com/a/universitycharterschools.org/vcstemposium/
VC STEMposium
Day 4, June 25, 2015

8:00—9:10 Welcome
Charmon Evans
Keynote—Dr. Phil Hampton
CSUCI

9:10—9:20 Break

9:20—11:30 Breakout Sessions

11:30—1:00 Lunch

1:00—3:00 Breakout Session

Don’t forget Exit Survey

"Most people say that it is the intellect which makes a great scientist. They are wrong: it is character. “ — Albert Einstein

WiFi
PVSDGuest

User Name:
Wirelessguest

Password:
8D@ysAweek

https://sites.google.com/a/universitycharterschools.org/vcstemposium/

"Most people say that it is the intellect which makes a great scientist. They are wrong: it is character. “ — Albert Einstein

https://sites.google.com/a/universitycharterschools.org/vcstemposium/
VC STEMposium  
Day 5, June 26, 2015  
Science Day for Kids

8:15—9:45  Welcome—at the outdoor stage  
Charmon Evans and Annie Ransom  
Keynote—Ron Hughes & Dave Hanley

9:45—10:15  Break and get ready for the kids

10:15—11:45  Session 1 with kids

11:45—1:15  Lunch

1:15—2:45  Session 2 with kids  
Don’t forget Exit Survey

https://sites.google.com/a/universitycharterschools.org/vcstemposium/
VC STEMposium
Day 5, June 26, 2015

KID AGENDA

7:45—8:05  Kids arrive and play on blacktop or playground
8:05—8:15  Bring kids over to UCMS use back gate
8:15—9:45  Keynote—Ron Hughes & Dave Hanley
9:45—10:15 Break, play, snack
10:15—11:45 STEM Session 1
  K and 1 stay at UPS
  Everyone else go to UCMS
  (staff take lunch break)
11:45—1:15 Lunch and play
1:15—2:45 STEM session 2
  K and 1 stay at UPS
  Everyone else go to UCMS
  (make sure to take a break)
2:45—3:15 Take kids back to UPS to play and wait for pick up
1. I have no idea how to read it
2. I can locate the different elements of the document such as the performance expectations or the crosscutting concepts
3. I can relate the 3 dimensions to the performance expectation
4. I can relate all of the components of the NGSS document to one another including the 3 Dimensions, the Performance Expectations, and the CCSS

1. I have heard of them before
2. I have a general idea of what they are about
3. I have done some research into these new standards
4. I would feel comfortable giving a basic presentation about the NGSS standards to other teachers

1-Not comfortable at all, I don't know where to start
3
4. Extremely comfortable, I already have several lessons in place
Do you currently integrate STEM activities with other school subjects such as ELA, art, history, etc?

- No, not at all: 29
- Yes, but rarely: 23
- Yes, sometimes: 26
- Yes, frequently: 4

Do you see yourself integrating STEM activities with other school subjects such as ELA, art, history, etc for the upcoming 2015-16 school year?

- No, not at all: 0
- Yes, but rarely: 2
- Yes, sometimes: 25
- Yes, frequently: 36

Do you feel prepared to create your own NGSS aligned lessons?

- No, not yet: 57
- Yes, I can't wait: 24

How would you rate your feelings of inspiration or passion for teaching science?

- 1 - I teach it because I have to: 0
- 2: 12
- 3: 42
- 4 - Science is my absolute favorite!: 26
Chico’s spring 2015 meeting provided participants an opportunity to share understandings of the new standards and to articulate where and how the new standards are introduced, practiced, and used to inform curriculum throughout the teacher preparation pipeline, from undergraduate disciplinary programs through credential pathways.

The day included an overview of CCSS resources; a session dedicated to sharing best practices; presentations to showcase courses, programs, and projects that feature the new standards through local, regional, and national initiatives; and a round table discussion to address next steps and future directions (agenda attached).

A total of 75 participants were invited: 54 education faculty/university supervisors and clinical partners, 21 disciplinary colleagues from English, math, science, history/social science, and Liberal Studies. A total of 27 participants attended, including disciplinary faculty in English (1), science (4), and liberal studies (2), with the remainder being faculty and university supervisors for the School of Education. The low participation rate is most likely a result of the AY ending earlier that is usual, although the day was technically an academic workday. However, those in attendance were appreciative of the event. Evaluation feedback was encouraging (see sample below). In short, in addition to identifying the many bright spots of the workshop, participants shared their desire to have additional opportunities for these important cross-campus conversations.

**Bright Spots:**
- Great information! Great presenters! Collegial atmosphere!
- Excellent discussion and ideas
- Seeing all the great things going on
- People talking across coursework
- Enjoyed seeing the range of resources that are available
- Appreciated hearing how others are “taking on” CCSS.
- Great resources
- Helpful information re: SOE effects/initiation
- Made CCSS very accessible; Google Drive resources.
- Good review of projects and curricular applications
- Collaborative conversations with colleagues

**Additional Opportunities & Other Suggestions:**
- Update on state initiatives and developments
- Discussion about the sociopolitical context of standardization. If we are to adapt this anti-oppressive opposed it needs to be led from the top.
- Wanted more time to hone in on my area of focus (literacy) and to think about what else I need to learn related to CCSS.
- Technology detracted from content – maybe simplify it somehow
- Perhaps facilitator to encourage talk across undergrad/cred.
- The exploration time was not productive. Need to do this by pathway and explore specifics on CCSS for level.
1. **Introductions and Announcements** *(Coffee and Pastries 8:30-9:00)*

2. **Overview of Resources**
   - What’s available
   - Exploration and discovery

3. **Share Best Practices: Discussion**
   - **What** New Standards do you teach (with or about)? (CCSS-ELA and technical standards, NGSS, CCSS-M, ELD)
   - **Where** do you teach the new standards (what courses)?
   - **How** do you teach (with or about) using the new standards?

**Break**

4. **Next Steps and Future Directions**
   - CCSS-ELA/Literacy in H/SS (Bercaw)
   - NGSS and TRIAD (Schademan)
   - CCSS-M and MTEP (Oloff)

5. **Roundtable Discussion**
   - What is the role of Higher Education and Teacher Preparation in new standards implementation?
   - As educators, how do we map all appropriate standards to each discipline while making them accessible to prospective teachers?
   - How do we best prepare candidates to teach using the new standards?
CSU DOMINGUEZ HILLS
Common Core Conference Final Report – CSU Dominguez Hills

The College of Education hosted a Common Core Conference for the South Bay and Mid-Cities region of Los Angeles Saturday, April 25, 2015 on the campus of CSUDH. Participants were recruited through mailings to schools and districts and by telephone invitation.

The event was held from 9:00 am – 1:30 pm and featured 10 breakout sessions and two keynote presentations (see attached agenda). The two keynote presenters came from local CSU campuses (Dr. Hallie Yopp-Slowik, CSUF & Dr. Ivan Cheng, CSUN). The breakout sessions were presented by a combination of local district teachers and CSUDH faculty. Additionally, a panel session was hosted by the Carlston Family Foundation’s Executive Director, Mr. Tim Allen, and four of the foundation’s teachers awarded for excellence in teaching.

Evaluation

53 participants registered for the event and 47 attended (see sign in sheet). Attendees came from three districts in our service area (Los Angeles USD, Compton USD and Torrance USD) and spanned the entire K-12 spectrum (with one attendee coming from the South Bay Regional Occupation Center). A full list of registrants is attached to this report.

Here are the grade level and position break downs of registrants:

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Participants</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre K - 2nd</td>
<td>14</td>
<td>26.4%</td>
</tr>
<tr>
<td>3rd - 5th</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td>6th - 8th</td>
<td>10</td>
<td>18.9%</td>
</tr>
<tr>
<td>9th - 12th</td>
<td>12</td>
<td>22.6%</td>
</tr>
<tr>
<td>College</td>
<td>4</td>
<td>7.5%</td>
</tr>
</tbody>
</table>
A small number of attendees responded to the post-event evaluation (n=14). The following charts contain the results of that evaluation.

**Overall, how valuable did you find the Keynote presentations?**

- Very Valuable: 6 (42.9%)
- Valuable: 7 (50%)
- Somewhat Valuable: 1 (7.1%)
- Not Valuable: 0 (0%)

**Overall, how valuable did you find the Breakout sessions?**

- Very Valuable: 7 (50%)
- Valuable: 5 (35.7%)
- Somewhat Valuable: 2 (14.3%)
- Not Valuable: 0 (0%)
What did you think about the length of the Keynote presentations?

- Too Long: 0 (0%)
- Just Right: 11 (78.6%)
- Too Short: 3 (21.4%)

What did you think about the length of the Breakout sessions?

- Too Long: 6 (0%)
- Just Right: 8 (57.1%)
- Too Short: 6 (42.9%)

Please tell us about other topics you'd like to learn more about in an upcoming conference.

- More of this kind of training! Thank you!!
- Mentoring new teachers
- I would like to know anything about special education topics.
- More training on Common Core and Smarter Balance would be appreciated. Our district is slowly providing information on how to prepare for the new testing and teaching.
- Special education and common core.

Your instructional grade level.

- Pre K-2: 1 (7.1%)
- Grades 3-5: 5 (36.7%)
- Grades 6-8: 4 (28.6%)
- Grades 9-12: 2 (14.3%)
- All K-12: 1 (7.1%)
- College: 1 (7.1%)
COMMONSENSE APPROACHES TO MEETING THE COMMON CORE STANDARDS

All K-12 Teachers, Administrators, University Faculty, and Supervisors are invited to participate in interactive sessions and panel discussions designed to develop further understanding and effectiveness in meeting the Common Core State Standards.

Join us on Saturday, April 25th, 2015
From 9 a.m. – 1 p.m.
in the Loker Student Union
(Ballrooms A & B)
Registration Deadline: April 17, 2015
*Lunch will be provided

Presenters include Carlston Family Foundation, award-winning teachers from local and statewide campuses to offer an inside-the-classroom perspective.

Keynote Speakers
Dr. Hallie Yopp Slowik
CSU Fullerton
Dr. Ivan Cheng
CSU Northridge

For more information and to register over the phone please call 310-243-3510
Or register online at http://goo.gl/m4OOEu
# Commonsense Approaches to Meeting the Common Core Standards

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<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:45 am – 9:00 am</td>
<td>Registration/Continental Breakfast</td>
<td>Ballrooms A &amp; B</td>
</tr>
<tr>
<td>9:00 am – 9:15 am</td>
<td>Welcome &amp; Opening Remarks</td>
<td>Ballrooms A &amp; B</td>
</tr>
<tr>
<td>9:15 am – 10:00 am</td>
<td><strong>Morning Keynote:</strong> Essential Strategies for Addressing the ELA Standards, Dr. Hallie Yopp-Slowik</td>
<td>Ballrooms A &amp; B</td>
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<tr>
<td>10:15 am – 10:50 am</td>
<td>“Leading the Change: Common Core Myths and Whole-School Practices” Dr. Toni-Issa Lahera, CSUDH</td>
<td>Loker Student Union, room #323</td>
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<td>“Digging into the Math Standards” Wendy Creek, Torrance USD, Math Resource Teacher</td>
<td>Loker Student Union, room #320</td>
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<td>“Reading within the Common Core: Infusing Fiction and Real-World Text” Jackie Ryan, Torrance USD, Middle School Curriculum Lead</td>
<td>Loker Student Union, room #328</td>
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<tr>
<td>11:00 am – 11:35 am</td>
<td>Concurrent Sessions: “Integrating History-Social Sciences through Inquiry in the Elementary Classroom” Dr. Lisa Hutton, Dominguez Hills History Project, Site Director</td>
<td>Loker Student Union, room #320</td>
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<td>“Inquiry-Based Learning in Science and Math Classes” Jose Rivas, Lennox &amp; Science Academy, Physics Teacher</td>
<td>Loker Student Union, room #323</td>
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<td>“Embedding Technology and Common Core” Andrew King, US History Teacher/Assistant Principal, Pasadena High School</td>
<td>Loker Student Union, room #328</td>
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<tr>
<td>11:45 am – 12:35 pm</td>
<td><strong>Afternoon Keynote:</strong> Transitioning to the Common Core Math Standards, Dr. Ivan Cheng</td>
<td>Ballrooms A &amp; B</td>
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<tr>
<td>12:40 pm – 1:15 pm</td>
<td>Concurrent Sessions: Panel Discussion with the Carlston Family Foundation Honorees, “Unlocking Student Potential: Using the Essential Tools of Effective Teaching”</td>
<td>Ballrooms A &amp; B</td>
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<tr>
<td></td>
<td>“Addressing the Common Core Standards through Inquiry: Sample Unit Exploration” Tracy Sprague, Torrance USD, Common Core Professional Developer</td>
<td>Loker Student Union, room #320</td>
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<tr>
<td></td>
<td>“It Starts with the Big Picture: Designing Instruction around the Unit Structure” James Evans, Torrance USD, High School Curriculum Lead</td>
<td>Loker Student Union, room #323</td>
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<tr>
<td></td>
<td>“Inquiry in the Science Classroom: Using the E5 Model to Unpack Performance Expectations” Katie Schenkelberg, Torrance USD, NGSS/ Assistant Principal</td>
<td>Loker Student Union, room #328</td>
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CSU EAST BAY
FINAL REPORT
CSU East Bay – Spring Meeting on CCSS/NGSS, April 25, 2015


Evaluations: Attendees rated the sessions on a 5 point scale, from 1 (not useful) to 5 (very useful). 72% of the attendees found the keynote useful to very useful. 88% of the attendees found the first breakout sessions (1A – 1C) useful to very useful. 100% of the attendees found the second breakout sessions (2A-2D) useful to very useful. Attendees appreciated the hand-outs – 44% commented that they would use what they had learned in their classrooms. One commented that a “structured” lunch that purposefully intermingled attendees and provided topics of conversation should be adopted in future conferences.

Participants: Invitations were issued to the university faculty; credential, masters, and doctoral students; and to master teachers and administrators in our partner districts: 62 registered and 47 attended. There were 6 faculty from undergraduate departments (math, chemistry, biology), 10 faculty (including supervisors) from TED, 1 from Ed Psych, 1 from Ed Leadership, 19 teachers/administrators from K-12, and 10 candidates from the credential programs.
Common Core State Standards & Next Generation Science Standards: What Have We Learned? What Are the Next Steps?

Join us for a day exploring how CSUEB and school districts in Alameda and Contra Costa Counties are implementing CCSS/NGSS.

SATURDAY, APRIL 25, 2015 - 10:00 am - 3:00 pm
CSU EAST BAY, HAYWARD CAMPUS, UNIVERSITY UNION
FREE + FREE PARKING + LUNCH

LEARN FROM BEST PRACTICES IN THE FIELD
Who Should Attend: Higher Education Faculty from Credential and Undergraduate Programs, K-12 Administrators, Secondary Teachers, Elementary Teachers, Preservice Teachers
TEAMS ENCOURAGED!

TO REGISTER: http://goo.gl/GSfrWg
or contact Thomas.wiley@csueastbay.edu
More information at ted.csueastbay.edu
Continuing Education Credits Available

Funded by the S. D. Bechtel, Jr. Foundation and the Office of the Chancellor, California State University
CCSS/NGSS

What Have We Learned? What Are the Next Steps?

April 25, 2015

10:00 – 10:15 Framing the Day and Setting the Context: What have we learned about CCSS/NGSS so far? What are the best practices? How can we take what we have learned and improve our practice? Dean Carolyn Nelson

10:15 – 11:00 Moving Forward With CCSS/NGSS. (Dr. Kathy Moore – Tentative. Dr. Moore’s most recent publication is Of Poetry and Math: Why Culturally Relevant Pedagogy Matters. She is a graduate of the CSUEB Educational Leadership Doctoral Program and is the Curriculum and Instruction: Literacy Coach at SRVUSD.)

Introduction of Response Team. (A group of about eight people who will visit the various breakouts and report back at the end of the day about important ideas, best practices, trends and overlaps, lessons learned, etc.)

11:05 – 12:15 Breakouts 1 (There will be simultaneous breakout sessions, one for multiple subject ELA, one for multiple subject math, one for multiple subject science, one for single subject ELA, one for single subject math, one for single subject science, one on technology and one on CCSS/Spec Ed. To date invitations to present have been issued to Dr. Julia Olkin, Dr. Danika Le Duc, Rachael DiStefano, Dr. Julie McNamara, Dr. Kathy Futterman, and Dr. Stephanie Couch in addition to personnel from OUSD, AUSD, NHUSD, CVUSD, WCCUSD, MDUSD, and the Contra Costa and Alameda County Offices of Education.

12:15 – 1:15 Lunch

1:15 – 2:25 Breakouts 2 (Same structure as Breakout 1)

2:30 – 3:00 Panel: Response Team – Summing up the Day, Lessons Learned
FRESNO STATE
Overview of Meeting

This meeting involved collaboration between Liberal Studies content faculty, school of education faculty, and K-12 partner teachers. The purpose of this collaboration was infusion of CCSS/NGSS/ELD standards in undergraduate teacher preparation.

AGENDA

8:30-9:00 AM Breakfast
9:00-9:15 AM Overview & Video Analysis Preparation- ROOM ED 157
9:15-10:15 AM Teaching Videos- Focus on Standards- K-12 Teacher Partners
10:15-10:30 AM BREAK
10:30 AM-12:00 PM Overview of K-12 Content Area Standards
12:00-1:00 PM LUNCH- ROOM ED 54
1:00-3:00 PM Disciplinary Groups: What are implications of standards for our discipline?
3:00-3:30 PM Debriefing- Crossing Disciplinary Boundaries

EVALUATION DATA

Data include revisions to Liberal Studies course syllabi with explicit references to CCSS/NGSS/ELD and descriptions of collaborative field experiences between LS faculty and K-12 teacher partners. Participants developed presentations identifying knowledge, skills, and dispositions of elementary teachers. They also provided session feedback via a Google Form elaborating on key points, connections to their own practice, usefulness, and suggestions for improvement of the workshop.

PARTICIPANT DEMOGRAPHICS

K-12 Partner Teachers 7
Multiple Subject Faculty 4
Single Subject Faculty 2
Liberal Studies Faculty 11
Staff 4
Total Participants 28
CSU FULLERTON
On May 8, 2015 the College of Education hosted a kick-off event for the TitanPRIDE grant funded by the S. D. Bechtel, Jr. Foundation. This event featured an overview of the grant, hosted a keynote speaker who set the context for “change”, and provided opportunities for all stakeholders to begin conversations about the key knowledge, skills, and dispositions graduating teacher candidates will require in order to be successful in the specific contexts of the communities they will serve. Afternoon sessions included panel discussions and presentations to highlight some best practices in teacher preparation. Topics such as keys to successful co-teaching pairs, protocols for instructional rounds, and university-district collaboration to address the Common Core State Standards and Next Generation Science Standards were showcased in these sessions. The morning events also featured a “Maker Space” and Ozobot demonstrations to highlight examples of STEM-based practices currently taking place in K-8 classrooms.

Sixty nine people attended the event: 17 district leaders from Fullerton School District & Anaheim Union High School District (superintendents, directors, principals, coordinators, etc.) 8 district teachers, 2 CSUF teacher candidates, 27 full-time faculty from the College of Education (COE), 4 part-time faculty from COE, COE Dean and Associate Dean, 1 COE staff, 1 full-time faculty from Natural Sciences and Mathematics (NSM), 5 part-time faculty from NSM, and 2 Titan PRIDE grant coordinators.

Note takers collected data throughout the day and this information will be shared at the grant advisory board meeting in the fall. Participants also generated ideas and questions about the roles of the different stakeholders involved in the project (see attached). Exit slips were also collected in the form of “Tweets” and “Hashtags” to summarize the event and the mission moving forward (see attached).
# Titan PRIDE: Strengthening Capacity Through Collaboration

## AGENDA

*Friday, May 8, 2015*

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>9:30</td>
<td><strong>Registration &amp; Coffee Bar</strong> Maker Space and Ozobot Demonstration</td>
<td>Titan Theatre</td>
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<tr>
<td>10:00</td>
<td><strong>Welcome and Grant Overview</strong> Dr. Claire Cavallaro, Dr. Kristin Stang &amp; Dr. Jennifer Ponder</td>
<td>Titan Theatre</td>
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<tr>
<td>10:30</td>
<td><strong>Keynote Address: Leadership in a Time of Change</strong> Ted Lai, Education Development Executive, Apple Inc.</td>
<td>Titan Theatre</td>
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<tr>
<td>11:45</td>
<td><strong>Lunch</strong> Maker Space and Ozobot Demonstration</td>
<td>Titan Theatre Island</td>
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### BREAKOUT SESSION #1

**The Vision for Clinical Experiences in K – 8 Classrooms in the 21st Century**
Dr. Mathew Barnett & Dr. Hallie Yopp Slowik

12:30

**The Vision for Clinical Experiences in 6 – 12 Classrooms in the 21st Century**
Dr. Diane J. Donnelly-Toscano, Supt. Michael Matsuda, Dr. Minerva Chavez & Dr. Antoinette Linton

### BREAKOUT SESSION #2

**Instructional Rounds in Teacher Preparation**
Barbara Finnell & Christine Mayfield

1:25

**Learning to Teach Together: Master Teachers and Teacher Candidates in the Mathematics Classroom**
Dr. Mark Ellis, Thomas Duarte, Susie Meza & Dr. Ruth Yopp-Edwards

**Co-Teaching in the Clinical Experience**
Laura Castrejon, Omar Garcia, Damon Ridgway, Marcy Fry & Alex Whitman

2:10  

**Closure**

---

CALIFORNIA STATE UNIVERSITY

FULLERTON™
1. Please select your role in the TitanPRIDE project.

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<tr>
<th>#</th>
<th>Answer</th>
<th>Response</th>
<th>%</th>
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<td>CSUF Faculty</td>
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<td>78%</td>
</tr>
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<td>2</td>
<td>CSUF Staff</td>
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<tr>
<td>3</td>
<td>CSUF Administration</td>
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<tr>
<td>4</td>
<td>K-12 Teacher</td>
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<td>5</td>
<td>K-12 Administration</td>
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Statistic | Value
---|---
Min Value | 1
Max Value | 5
Mean | 1.89
Variance | 2.93
Standard Deviation | 1.71
Total Responses | 18

2. The TitanPRIDE kick-off event provided a clear overview of the goals and objectives of the grant.

<table>
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<th>Answer</th>
<th>Response</th>
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<tbody>
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<td>9</td>
<td>50%</td>
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<tr>
<td>2</td>
<td>Agree</td>
<td>8</td>
<td>44%</td>
</tr>
<tr>
<td>3</td>
<td>Neither Agree nor Disagree</td>
<td>1</td>
<td>6%</td>
</tr>
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<td>4</td>
<td>Disagree</td>
<td>0</td>
<td>0%</td>
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<tr>
<td>5</td>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
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<td></td>
<td>Total</td>
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<td>100%</td>
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</table>

Statistic | Value
---|---
Min Value | 1
Max Value | 3
Mean | 1.56
Variance | 0.38
Standard Deviation | 0.62
Total Responses | 18
3. I understand my role in the TitanPRIDE project.

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<tbody>
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<td>1</td>
<td>Strongly Agree</td>
<td>6</td>
<td>33%</td>
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<td>2</td>
<td>Agree</td>
<td>8</td>
<td>44%</td>
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<td>3</td>
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<td>3</td>
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<tr>
<td>4</td>
<td>Disagree</td>
<td>1</td>
<td>6%</td>
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<tr>
<td>5</td>
<td>Strongly Disagree</td>
<td>0</td>
<td>0%</td>
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<td>18</td>
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<td>Mean</td>
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<td>Standard Deviation</td>
<td>0.87</td>
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<td>Total Responses</td>
<td>18</td>
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</table>

4. I have a clear understanding of the knowledge, skills, and dispositions that are required for teacher candidates to successfully complete a teacher preparation program.

<table>
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<td>Strongly Agree</td>
<td>11</td>
<td>61%</td>
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<tr>
<td>2</td>
<td>Agree</td>
<td>5</td>
<td>28%</td>
</tr>
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<td>3</td>
<td>Neither Agree nor Disagree</td>
<td>2</td>
<td>11%</td>
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<td>4</td>
<td>Disagree</td>
<td>0</td>
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<td>Strongly Disagree</td>
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5. I understand the role of co-teaching in the preparation of teachers in the TitanPRIDE project.

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<td>0.62</td>
</tr>
<tr>
<td>Total Responses</td>
<td>18</td>
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6. I think school district personnel should have more input and involvement in teacher preparation.

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<th>#</th>
<th>Answer</th>
<th>Response</th>
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<tbody>
<tr>
<td>1</td>
<td>Strongly Agree</td>
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<td>2</td>
<td>Agree</td>
<td>8</td>
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<td>3</td>
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<td>8</td>
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<td>4</td>
<td>Disagree</td>
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<tr>
<td>5</td>
<td>Strongly Disagree</td>
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<td>Total</td>
<td>17</td>
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<td>Min Value</td>
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<td>Mean</td>
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<td>Variance</td>
<td>0.38</td>
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<td>Standard Deviation</td>
<td>0.62</td>
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<td>Total Responses</td>
<td>17</td>
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7. I think school district personnel and faculty from CSUF should collaborate on professional development opportunities for teachers and CSUF students.

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<th>#</th>
<th>Answer</th>
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<tr>
<td>1</td>
<td>Strongly Agree</td>
<td>11</td>
<td>65%</td>
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<td>2</td>
<td>Agree</td>
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<td>Neither Agree nor Disagree</td>
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**Statistic** | **Value**
---|---
Min Value | 1
Max Value | 2
Mean | 1.35
Variance | 0.24
Standard Deviation | 0.49
Total Responses | 17
8. If you could choose 5 instructional practices (regardless of subject matter or teaching credential) that all beginning teachers would possess before leaving a teacher preparation program what would those practices be?

Text Response

accommodation, differentiation, cultural competence, classroom management, and subject area competence

Regard parents as allies Listen to others Respond well to suggestions Regard protocol and the chain of command know who your clients are and treat them as the biggest account you ever had!

Classroom management skills, skills to adapt curriculum for Els and students with special needs, lesson planning, ability and knowledge to create meaningful assessments, and the ability to be a "presence" in the classroom

Common Core Assessments: PTA, PBL, most already come with this

In no particular order: setting and implementing learning goals, differentiation, use of effective graphic organizers (specifically, Thinking Maps), collaborative structures (Krashen), any strategy the increases student active engagement

Curriculum planning, classroom management, assessing learning, differentiating instruction techniques, successfully communicating and collaborating with colleagues, patience, open-minds, research oriented, skills in co-teaching and collaboration, behavior management

Social Emotional Learning strategies, methodology of connecting with students, growth mindset,

Good Classroom Management; Learning Processing time (Teacher talk vs. Student Talk); Technology Knowledge; Interpersonal skill/Work Ethic; Common Sense effective, engaging and inclusive classroom management EL strategies parent communication

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<td>Total Responses</td>
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9. Is there anything else you would like to share with us about the TitanPRIDE project?

Text Response

:) This is an exciting time in the transformation of teacher preparation in California. TitanPRIDE's work will be felt for many years to come. My hope is that it authentically represents the skills that teachers need to be effective and supportive of today's youth. It will work and look very different at the secondary level

Thanks for the opportunity.

I am very excited to be able to be a part of and learn from this exciting pilot!
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<td>Total Responses</td>
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What's Common about the Common Core? Professional Development
CSULB-College of Education, May 4, 2015
Report prepared by Paul Boyd-Batstone, Chair of the Department of Teacher Education

**Agenda:**
Date: Monday, May 4th  
Time: 4:00-7pm  
Place: AS 119- Anatol Center  
Dinner: Provided 4-4:45pm  
Audience: Student Teaching Supervisors, Part-time faculty, district partners, CED faculty, and students.

Program Outline:
Key note address: 4:45-5:15  
Dr. Jana Echevarria: What Does the Common Core Mean for English Learners?

Breakout Session I (Choose one area) 5:30-6:10  
Dr. Tim Kiern: Historical Thinking and the Common Core (Anatol AS-119)  
Dr. Laura Henriques: Introduction to Next Generation Science Standards and Their Alignment with CCSS (AS-124)

Breakout Session II (Choose one area) 6:10-6:40  
Dr. Sue Leonard-Giesen: Adapting Our Teaching: CCSS for K-12 Students with Special Needs (Anatol AS-119)  
Dr. Babette Benken: Modeling: The Common Content Thread of CCSS-Math (AS-124)

Wrap up, reflection, and appreciation: 6:45-7pm

**Evaluation data:**

1. **Overall effectiveness and quality of presentations** (N= 28 responses)

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<td>4 (n=12) 43%</td>
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2. **Overall timeliness and relevance of topics**

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<td>4 (n=10) 36%</td>
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**Keynote Address by Dr. Jana Echevarria (N= 28 responses)**

A. Quality of presentation

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B. Relevance to your educational goals

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<td>4 (n=8) 28%</td>
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Breakout Session Ia: Dr. Tim Kiern (N=15)

A. Quality of presentation

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<th>3 (n=1) 6%</th>
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<th>5 (n=6) 40%</th>
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B. Relevance to your educational goals

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<th>fair</th>
<th>3 (n=3) 20%</th>
<th>4 (n=4) 26%</th>
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Breakout Session Ib: Dr. Laura Henriques (N=12)

A. Quality of presentation

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B. Relevance to your educational goals

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<th>fair</th>
<th>3 (n=1) 8%</th>
<th>4 (n=1) 8%</th>
<th>5 (n=10) 84%</th>
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Breakout Session Ila: Dr. Susan Leonard-Guisen (N=11)

A. Quality of presentation

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<th>4 (n=5) 44%</th>
<th>5</th>
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B. Relevance to your educational goals

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<th>3 (n=3) 27%</th>
<th>4 (n=6) 56%</th>
<th>5 (n=2) 17%</th>
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Breakout Session IIB: Dr. Babette Benken (N=13)

A. Quality of presentation

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<th>fair</th>
<th>3 (n=2) 15%</th>
<th>4 (n=4) 31%</th>
<th>5 (n=7) 54%</th>
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B. Relevance to your educational goals

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<th>fair</th>
<th>3 (n=2) 15%</th>
<th>4 (n=6) 46%</th>
<th>5 (n=5) 39%</th>
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Comments:
Handouts as power points as a resource would really help.
Thank you student ambassadors and presenters!
Ditch the special ed. video, presenter was much more informative.
Very informative.
Usable, engaging.
Eye opening.
I'm sure History presenter knows all the terms, but I need it broken down to how to do it in the classroom. Too esoteric; be pragmatic.
Math works the problems.
Would like an example of SIOP.
Practical applications from Science!
Math: Interesting working "it in" working "with it". It's all the same question.
Excellent metaphor.
Provide more special ed. hands on resources for the scholars in grades k-12.
Demographics of attendees:

Total signed in attendance: N=50

Community and District Partners (n=6)
2  Compton USD
3  Long Beach BLAST
1  LAUSD

University Student Teaching Supervisors and Part-time faculty (n=13)
8  MSCP University Supervisors
2  Single Subject University Supervisors
2  ED Specialist Supervisor
1  Part-time faculty (math)

Full-time Faculty (n=9)
7  Full-time
2  Retired

Administration (n=2)
1  Program Administrator
1  Associate Dean

Students (n=20)
18  Doctoral students
1  Nursing
1  Masters
What's Common about the Common Core?
{Funding provided by the S.D. Bechtel, Jr. Foundation
and the Cal State University}

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  B. Dr. Babette Benken: Modeling: The Common Content Thread of CCSS-Math (AS-124)

Wrap up, reflection, and appreciation: 6:45-7pm

(BREAKOUT SESSIONS will be held in Anatol AS-119 and AS-124)
Report to the Office of the Chancellor

“Preparing a New Generation of Educators for California Initiative”

On Thursday May 28, 2015, Charter College of Education, California State University, L. A. held an event entitled “A Conversation between TK-12 and IHE Educators on Curricular and Instructional Planning” at the Luminaria’s Meeting Center.

The program began a welcome address by the Dean of the Charter College of Education, Dr. Eunsook Hyun. During her welcome address, the CSU Chancellor’s Office and the Bechtel Foundation were acknowledged for their financial and organizational support. It was followed by a keynote address by our campus CAR representative, Dr. Joan Fingon. A panel of five District Administrators followed; they addressed how districts are implementing the new curriculum standards for CCSS Language Arts/Math, EL Standards, and NGSS and how teachers are implementing these curricular changes. Dinner & Break-out Discussions ensued. Afterwards, a second panel consisted of four Cal State L.A. faculty shared their research and perspectives on Curriculum, Instructional Strategies, Science, Language Arts, and English Language Development; which once again was followed a question-and-answer session.

The event garnered 58 participants, they included fifteen Cal State L.A full time faculty, one FERP faculty and two Field Supervisors from the Charter College of Education, one from Liberal Arts, one from Child & Family Studies, one from Chicano Studies, one from Engineering and one Field Supervisor. No part time faculty attended. Twenty-three TK-12 participants came from six local School Districts, as well as representatives from the Los Angeles County Office of Education. The local School Districts included the Alhambra Unified School District, Valle Lindo School Districts, Mountain View School District, Pasadena Unified School District, Whittier School District, Garvey School District, and Los Angeles Unified School District. To add to the diversity of the participants the Charter College of Education invited fifteen Graduate Students from our Credential Program to participate, along with one undergraduate student from social work. No evaluation instrument was used for this event, in that the event planners envisioned a continuation of further conversations with district leaders in the near future.
A Conversation between TK-12 and IHE Educators on Curricular and Instructional Planning

Schedule

4:00-4:15  Introductions
Welcome Remarks by Dr. Eunsook Hyun
Dean of the Charter College of Education, CSULA

4:15-4:30  Keynote Speaker:  Dr. Joan Fingon
Literacy Professor, CSULA

4:30-5:30   Panel of District Teachers and Administrators
•  Janet Lees, Director of Pre-School/Elementary Education
  Alhambra Unified School District

•  Philip Ogbuehi, Coordinator of Secondary Mathematics
  Los Angeles Unified School District

•  Della Larimore, ELA Consultant
  Los Angeles County Office of Education

•  Dotti Ysais, Project Director, Ctr. for Distance & Online Learning
  Los Angeles County Office of Education

•  Rebecca Rodriguez, Principal, Phelan Elementary School
  Whittier City School District

5:30-6:30   Dinner & Small Group Discussion

6:30-7:30   Panel of Cal State L.A. Faculty
•  Paula Arvedson
  Faculty, Curriculum and Instruction

•  Diane Haager
  Faculty, Special Education

•  Robert Land
  Faculty, Curriculum and Instruction

•  Paul Narguizian
  Faculty, Biological Science

•  Mario Castañeda
  Faculty, Curriculum and Instruction

7:30-8:00   Questions and Answer Session & Closing Remarks

The Charter College of Education thanks the S. D. Bechtel, Jr. Foundation for its generous contribution to this event and the CSU Chancellor’s Office for its continued support of teacher education programs.
Cal State L.A. “Conversation between K12 and IHE Educators on Curricular and Instructional Planning” May 28, 2015

Evaluation Form

1. Overall effectiveness and quality of the event
   poor fair excellent
   1   2          4   5

2. Overall timeliness and relevance of topics
   poor fair excellent
   1   2          4   5

3. Keynote Address by Dr. Joan Fingon
   A. Quality of presentation
      poor fair excellent
      1   2          4   5
   B. Relevance to your educational goals
      poor fair excellent
      1   2          4   5

4. The Panel Presentation by District Curriculum Leaders
   A. Quality of presentation
      poor fair excellent
      1   2          4   5
   B. Relevance to your educational goals
      poor fair excellent
      1   2          4   5

5. The Panel Presentation by Faculty from Cal State L.A.
   A. Quality of presentation
      poor fair excellent
      1   2          4   5
   B. Relevance to your educational goals
      poor fair excellent
      1   2          4   5

Overall Comments about the event i.e. venue, set up, schedule, speakers, etc.

I think that it is important to have current CCOE students attend this event so that they are aware of the different challenges and successes that current teachers are experiencing in the community.
Cal State L.A. “ Conversation between K12 and IHE Educators on Curricular and Instructional Planning” May 28, 2015

Evaluation Form

1. Overall effectiveness and quality of the event
   poor  fair  excellent
   1    2    3    4    5

2. Overall timeliness and relevance of topics
   poor  fair  excellent
   1    2    3    4    5

3. Keynote Address by Dr. Joan Fingon
   A. Quality of presentation
      poor  fair  excellent
      1    2    3    4    5
   B. Relevance to your educational goals
      poor  fair  excellent
      1    2    3    4    5

4. The Panel Presentation by District Curriculum Leaders
   A. Quality of presentation
      poor  fair  excellent
      1    2    3    4    5
   B. Relevance to your educational goals
      poor  fair  excellent
      1    2    3    4    5

5. The Panel Presentation by Faculty from Cal State L.A.
   A. Quality of presentation
      poor  fair  excellent
      1    2    3    4    5
   B. Relevance to your educational goals
      poor  fair  excellent
      1    2    3    4    5

Overall Comments about the event i.e. venue, set up, schedule, speakers, etc. :
It was great to hear about current teacher training practices and to have a connection with the faculty. It's been over twenty years since I received my credentials. Thank you to all the presenters, and thanks for the refreshments as well. It was a pleasant room for the meeting.
Cal State L.A. “Conversation between K12 and IHE Educators on Curricular and Instructional Planning” May 28, 2015

Evaluation Form

1. **Overall effectiveness and quality of the event**

   poor  fair  excellent
   1   2  3  4   5

2. **Overall timeliness and relevance of topics**

   poor  fair  excellent
   1 2  3  4   5

3. **Keynote Address by Dr. Joan Fingon**

   A. Quality of presentation
      poor  fair  excellent
      1  2  3  4   5
   B. Relevance to your educational goals
      poor  fair  excellent
      1  2  3  4   5

4. **The Panel Presentation by District Curriculum Leaders**

   A. Quality of presentation
      poor  fair  excellent
      1  2  3  4   5
   B. Relevance to your educational goals
      poor  fair  excellent
      1  2  3  4   5

5. **The Panel Presentation by Faculty from Cal State L.A.**

   A. Quality of presentation
      poor  fair  excellent
      1  2  3  4   5
   B. Relevance to your educational goals
      poor  fair  excellent
      1  2  3  4   5

**Overall Comments about the event i.e. venue, set up, schedule, speakers, etc. :**

Pretty venue, we were all sorry there were only snacks instead of dinner. Needed more coordination and communication among speakers before the event (and a time keeper).
Cal State L.A. “Conversation between K12 and IHE Educators on Curricular and Instructional Planning” May 28, 2015

Evaluation Form

1. **Overall effectiveness and quality of the event**
   - poor
   - fair
   - excellent
   - 1
   - 2
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2. **Overall timeliness and relevance of topics**
   - poor
   - fair
   - excellent
   - 1
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3. **Keynote Address by Dr. Joan Fingon**
   - A. Quality of presentation
     - poor
     - fair
     - excellent
     - 1
     - 2
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   - B. Relevance to your educational goals
     - poor
     - fair
     - excellent
     - 1
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4. **The Panel Presentation by District Curriculum Leaders**
   - A. Quality of presentation
     - poor
     - fair
     - excellent
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   - B. Relevance to your educational goals
     - poor
     - fair
     - excellent
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5. **The Panel Presentation by Faculty from Cal State L.A.**
   - A. Quality of presentation
     - poor
     - fair
     - excellent
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   - B. Relevance to your educational goals
     - poor
     - fair
     - excellent
     - 1
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     - 5

**Overall Comments about the event i.e. venue, set up, schedule, speakers, etc.**:

I appreciate the work the university has done to recruit funding for events like this, and I hope that we can continue the conversations, reflections and possible staff development training. Thank you!
Cal State L.A. “Conversation between K12 and IHE Educators on Curricular and Instructional Planning” May 28, 2015

Evaluation Form

1. **Overall effectiveness and quality of the event**
   
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2. **Overall timeliness and relevance of topics**
   
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3. **Keynote Address by Dr. Joan Fingon**
   
   A. **Quality of presentation**
      
      |      |      |      |      |      |
      |------|------|------|------|------|
      | poor | 1    | 2    | 3    | 4    |
      | fair |      |      |      |      |
      | excellent | 5 |      |      |      |
   
   B. **Relevance to your educational goals**
      
      |      |      |      |      |      |
      |------|------|------|------|------|
      | poor | 1    | 2    | 3    | 4    |
      | fair |      |      |      |      |
      | excellent | 5 |      |      |      |

4. **The Panel Presentation by District Curriculum Leaders**
   
   A. **Quality of presentation**
      
      |      |      |      |      |      |
      |------|------|------|------|------|
      | poor | 1    | 2    | 3    | 4    |
      | fair |      |      |      |      |
      | excellent | 5 |      |      |      |
   
   B. **Relevance to your educational goals**
      
      |      |      |      |      |      |
      |------|------|------|------|------|
      | poor | 1    | 2    | 3    | 4    |
      | fair |      |      |      |      |
      | excellent | 5 |      |      |      |

5. **The Panel Presentation by Faculty from Cal State L.A.**
   
   A. **Quality of presentation**
      
      |      |      |      |      |      |
      |------|------|------|------|------|
      | poor | 1    | 2    | 3    | 4    |
      | fair |      |      |      |      |
      | excellent | 5 |      |      |      |
   
   B. **Relevance to your educational goals**
      
      |      |      |      |      |      |
      |------|------|------|------|------|
      | poor | 1    | 2    | 3    | 4    |
      | fair |      |      |      |      |
      | excellent | 5 |      |      |      |

**Overall Comments about the event i.e. venue, set up, schedule, speakers, etc.:**
CSU SACRAMENTO
Preparing a New Generation of Educators for California Initiative: A Report to the CSU Chancellor’s Office

Sacramento State

Office of the Dean – College of Education
With funding from the S.D. Bechtel, Jr. Foundation, the CSU Chancellor’s Office provided each campus with the opportunity to host a local meeting for teacher preparation faculty, P-12 partners from local districts, and community organizations to continue the important work of preparing new teachers to meet the challenges of common core. This report summarizes the Common Core/New Generation activities that took place on May 15, 2015 at Sacramento State.

The purpose of this meeting was to discuss how Sacramento State is working across institutions and teacher preparation programs to ensure that the next generation of educators are world-class teachers. This meeting provided participants with an opportunity to: (a) share key activities associated with the showcase new generation projects; (b) identify additional and related new generation efforts; and (c) delineate ways in which all efforts can be “braided” to make our vision of future educators a reality.

The twenty-four colleagues in attendance included not only Sacramento State faculty (17 members), but also ten members of the broader education community, including K-12 district staff (HR directors, Induction Coordinators, CTE Coordinators, etc.), and community partners. Project members from the CAP/CRANE initiatives, CSUS Faculty Learning Community for Next Generation Science Standards, Sacramento Pathways to Success (especially the Mathematics, English/Language Arts and Teacher Collaborative working groups), and representatives from the teaching credential programs at Sacramento State were also invited.

The outcome measures for the day are the resulting projects. The faculty and district partners are continuing their efforts to integrate the new California standards into curriculum and pedagogy from a multicultural/social justice perspective. Three key outcomes are: 1) The CoE faculty and San Juan Unified School District are planning a Social Justice and Common Core Summer Institute for 2016; 2) the faculty will be working with Florin High School (Elk Grove Unified School District) on developing/implementing a Participatory Action Research model using Common Core into student teaching; and 3) a new process was developed for streamlining student teaching placements and mentor teacher support in high schools with Linked Learning pathways. Finally, materials are being shared between school partners and teacher preparation faculty members to align ELD/SDAIE instruction in the teacher preparation program with professional learning for our K-12 partner teachers.

Participants exchanged resources currently used to support pre- and in-service teachers’ use of new ELD Standards.
9:00-9:15 a.m.  Welcome Vanessa Sheared, Dean of College of Education

9:15-9:30 a.m. Icebreaker

9:45-10:00 a.m. Overview of the Day

10:00-10:15 a.m. Changes in California's K-12 Public Education

• Broad Overviews of New Standards
• Brief Description of California’s New Assessment System: the California Assessment of Student Performance and Progress (CAASPP)

10:15 a.m.-12:00 p.m. Campus Efforts and Showcase Gallery

• Updates from Teacher Preparation Programs
  o Admission numbers
  o Key features of our programs (Social Justice focus, team teaching, CSSTs, faculty as supervisors, Parent Teacher Home Visit Project, GE/EDS collaboration)
  o Highlights from Special Education TaskForce Report (highlight 3 major changes)
• Review Vision developed by partners in November 2014
• Showcase Gallery Walk for CAP/CRANE, NGSS FLC, Sac Pathways, New Standards implementation in MS/SS/EDS programs
• Affinity Group Discussion: Find a project you can learn from or share expertise with (based on the Gallery Walk) and discuss ways to collaborate and inform each other.

12:00-12:30 p.m. Lunch

12:30-1:30 p.m. Implementation Activities

• Closer Look at the new Standards and Changing Practices by Subject Matter
• Discussion of Implications for Teacher Preparation—Both in Coursework and Clinical Practice
  o Activities, initiatives, programs to expand, broaden, tighten or scale up?

1:30-2:00 p.m. Report Out

2:00-2:15 p.m. Break

2:15-3:15 p.m. Whole Group Reconvenes: Action Steps

3:15-3:30 p.m. Final Comments and Adjourn
SAN DIEGO STATE
On May 19, 2015, the College of Education and the Liberal Studies Program collaborated to host a convening that brought faculty members from the College of Education and the Liberal Studies Program together to share knowledge and practices regarding the new California Standards and new assessments. The event was held at San Diego State University’s Parma Payne Goodall Alumni Center.

The agenda is submitted along with this report. It reflects the interactive nature of the day during which faculty members participated who have extensive experience with the standards and with implementing related knowledge and practices within their syllabi, as well as those who are at more beginning stages of knowledge and experience. The goal was to bring both undergraduate and credential faculty together to share information and practices and learn together.

Approximately 50 faculty members were invited; and, given the time of year at the end of the semester, we were happy to welcome 22 participants: 12 Liberal Studies faculty members (9 lecturers and 3 tenured/tenure-track faculty members) and 10 College of Education faculty members (5 tenured/tenure-track and 5 lecturers). It was a productive day during which faculty members had an opportunity to learn with and from
one another and plan action steps to further deepen their understandings and make the new CA Standards and assessments a central feature of their work with aspiring teachers.

The following is the invitation that was disseminated.

Dear Colleagues,

We look forward to seeing you on May 19 at the *Creating Shared Knowledge Through Partnerships: Common Core State Standards and New Assessments* event in the Parma Payne Goodall Alummi Center.

This event brings College of Education and Liberal Studies faculty members together to learn with and from one another and share ideas about CCSS implementation in courses and programs. It's an opportunity for collaboration focused on a shared objective of preparing aspiring teachers.

If the CCSS are already reflected in your course, please bring your ideas for implementation, as well as any materials/resources you think would be useful to share. If you have a laptop or other device to access the Internet, please consider bringing it so that you can view the standards' documents online. This will be especially useful when we break out into content groups.

A follow-up five-question evaluation was sent via Qualtrics to all participants. Only three individuals responded. However, in addition to the survey feedback, participant responses at the end of the workshop day were uniformly positive. They articulated appreciation for the opportunity to be informed about California State Standards and new assessments and collaborate across the College of Education and Liberal Studies Program. Below are the survey questions and responses.

1. Please identify the college or program in which you teach. Participants who responded were from the College of Education and undergraduate Liberal Studies Program.

2. What new insights have you gained from the May 19, 2015 event at SDSU's Parma Payne Goodall Alumni Center?
It was interesting to hear the district perspective on CCSS. It was good to see that they’re making efforts to implement [the new standards]. I enjoyed hearing about how the CCSS/LA intersect with ELD standards.

3. What information from the May 19 event will influence your teaching and/or supervision?
   I don’t know what exactly will impact my course, but I want to learn more about the ELD standards and how better to prepare my students to teach students who are English learners.

4. What did you find most useful about this workshop?
   As a math guy, I found the non-math presentations most informative.

5. What suggestions do you have for future events?
   None
## AGENDA

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td>Sign-in and continental breakfast</td>
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<tr>
<td>9:00</td>
<td>Welcome</td>
<td>Dr. Nadine Bezuk, Professor and Director&lt;br&gt;School of Teacher Education&lt;br&gt;Dean Joseph Johnson&lt;br&gt;College of Education&lt;br&gt;Dean Geoffrey Chase&lt;br&gt;College of Undergraduate Studies</td>
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<tr>
<td>9:15</td>
<td>Overview of today’s realities in grades K-12</td>
<td>Dr. Jean Madden-Cazares&lt;br&gt;Assistant Superintendent for Learning and Leadership Services&lt;br&gt;San Diego County Office of Education</td>
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<td>10:15</td>
<td>Break</td>
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<tr>
<td>10:30</td>
<td>English Language Arts and English Language Development in the Content Areas</td>
<td>Dr. Karen Cadiero-Kaplan&lt;br&gt;Professor and Interim Chair&lt;br&gt;Department of Dual Language and English Learner Education (DLE)</td>
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<tr>
<td>11:30</td>
<td>Revising a Course to Integrate the CaCCSS-M</td>
<td>Dr. Susan Nickerson&lt;br&gt;Associate Professor&lt;br&gt;Department of Mathematics and Statistics</td>
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<td>12:30</td>
<td>Lunch</td>
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<tr>
<td>1:00</td>
<td>Break-out #1: Sharing Resources and Revising Course Assignments and Activities (Groups: math, science, social studies, and English Language Arts (ELA))</td>
<td>Leaders of Break-out Sessions: Math: Dr. Nadine Bezuk&lt;br&gt;Science: Dr. Sharon Bendall&lt;br&gt;Social Studies: Dr. Laura Hall&lt;br&gt;ELA: Dr. Karen Cadiero-Kaplan</td>
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<td>2:00</td>
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<td>2:15</td>
<td>Break-out #2: Continuing the Conversation and Action Steps. (Groups: College of Education and Liberal Studies Program)</td>
<td>Leaders of Break-out Sessions: Liberal Studies group: Dr. Sharon Bendall&lt;br&gt;College of Education: Dr. Nancy Farnan</td>
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<tr>
<td>3:15</td>
<td>Reconvene and Share</td>
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<tr>
<td>4:00</td>
<td>Adjourn</td>
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## CALIFORNIA COMMON CORE STANDARDS & FRAMEWORKS RESOURCES:

- CA ELD: [http://www.cde.ca.gov/sp/el/er/eldstandards.asp#Standards](http://www.cde.ca.gov/sp/el/er/eldstandards.asp#Standards)
- CA Next Generation Science Standards: [http://www.cde.ca.gov/pd/ca/sc/ngssstandards.asp](http://www.cde.ca.gov/pd/ca/sc/ngssstandards.asp)
Standards in Teacher Preparation Meeting Report
May 8, 2015

Hosted by: SFSU/Graduate College of Education

On May 8, 2015, the SFSU/Graduate College of Education hosted a local meeting for faculty and K-12 partners on campus in the Library Faculty Commons/event room.

There were 53 attendees from San Francisco State University, San Francisco Unified School District, San Mateo Union High School, SRI International and Skyline College.

Breakdown of participant demographics – 53 total attended
- SFSU/GCOE Faculty – 30
- San Francisco Unified School District - 18
- San Mateo Union High School – 1
- SRI International – 2
- Skyline College - 2

The following documents were enclosed/attached in the email that was sent to Dr. Ruth Yopp –Edwards on May 15, 2015:
- Brief report
- Meeting Agenda
- Sign-in Sheet
- Six presentation documents and handouts that were used for the work group discussions including Science, Math and Literacy /Social Studies
- Catering/Food Service order

GCOE/may 8th/standardsmtg/report/vn
Graduate College of Education

Discussion Forum:

Addressing the New EC-12 Standards in Teacher Preparation

May 8th, 2015

Agenda

11:00am – 11:10am  Welcome and Overview of the Day  [All]
    • Dean, Graduate College of Education

11:10am – 11:55 am  Smarter Balance Assessment Team – Group Activity  [All]
    • SFUSD & SFSU

12:00pm – 1:25 pm  Working Lunch
    • Library Room 121:  CCSS and NGSS Groups
    • Library Room 286:  ELA and ELD Groups
    • Small group Subject Area meetings (CCSS, NGSS, ELA, ELD)
    • Each group will be facilitated by a K-12 partner and SFSU faculty
    • Closer look at Changing Practices by Subject Matter
    • Discussion of Implications for Teacher Preparation – Both in Coursework and Clinical Practice
    • Questions/Thoughts/Needs/Plans and Group Identification of 3 to 5 Ideas to Share

1:30pm – 2:00pm  Reconvene  [All]
    • Whole Group Reconvenes and Groups Share Key Ideas/Thoughts/Questions
May 8th New Standards Discussion Forum Survey

value poor fair satisfactory good excellent

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<td>Overall Wt Avg</td>
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Question 10: Comments
1. My hopes were that the event was around how teachers are actually being prepared as educators.
2. There needs to be small group follow-ups. More collaboration with the district.
   Seems to be missing any critical analysis from the school district.
   There is a large movement throughout the main cities in the US raising critical issues around these assessment and CCS.
3. I was really confused about the goals of the forum. I thought that the university wanted to hear about what coaches, like myself, see out in the field as we support new teachers. I thought it was an opportunity for us to share what we think might be useful to include in the credentialling program. I did not feel that the forum was organized in a manner conducive to an open exchange of ideas.
Survey Questions Weighted Average

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Discussion Subject

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Presentations Weighted Average

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Spring 2015 Meeting  
6/11/15  
8:00-4:30pm  
Cal Poly, San Luis Obispo

Final Report

Cal Poly, San Luis Obispo’s School of Education hosted an event on campus to further prepare faculty for teaching with the new standards (CCSS, NGSS, ELD), assessment system, frameworks, and instructional strategies (including Project Based Learning). Faculty and staff in School of Education partnered with educators from New Tech High in Nipomo, California to facilitate the meeting.

Twenty-two (22) meeting participants included faculty from Single and Multiple subject and Special Education programs (10), Liberal Studies (2), Center for Excellence in STEM (2), and College of Engineering (3). Five (5) K-12 teachers and administrators were also in attendance. During the meeting, participants engaged in project-based working groups to present their vision for what the educational landscape will look like in 2025, using new standards, assessments and innovative instructional strategies. The agenda and evaluation data for the meeting are included as attachments.
Spring 2015 Meeting
6/11/15,
8:00-4:30pm
Cal Poly, San Luis Obispo
Learn by Doing Lab

Agenda

Introductions & Objectives

• Introduction to Project Based Learning and New Standards

• Project Roll Out: Entry Event and Docs

• Project Guidelines and Problem Questions

Coffee Break (10:00)

21st Century Skills and Standards

• Developing 21st century skills through instruction & assessment

• Aligning Project-Based Learning with NGSS, CSS and ELD Standards

• Mid-Project Reflection

Lunch (12:00-1:00)

Working Groups: Education in 2025

• Revisit Project Guidelines

• Working Groups to prepare vision for education in 2025

• Final Presentations

• Reflection & Debrief
A survey was administered after the meeting regarding participants’ views on project based learning, teaching to NGSS, CCSS and ELD standard and 21st century skills. Participants (n=16) responded to each question using a 5-point Likert scale. Responses were averaged and are presented below:

<table>
<thead>
<tr>
<th>Question</th>
<th>Average Response</th>
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<tbody>
<tr>
<td>I now have a stronger understanding of the essential elements of Project Based Learning.</td>
<td>4.56</td>
</tr>
<tr>
<td>21st century learners need to be challenged, engaged and inspired in different ways than in the past.</td>
<td>4.06</td>
</tr>
<tr>
<td>Project Based Learning is an effective instructional strategy for engaging learners with in-depth inquiry.</td>
<td>4.37</td>
</tr>
<tr>
<td>By incorporating UDL and ELD standards, Project Based Learning is an effective instructional strategy that meets the diverse needs of today’s learners.</td>
<td>4.37</td>
</tr>
<tr>
<td>Project Based Learning is an easy way to teach 21st century skills and Common Core/NGSS.</td>
<td>3.68</td>
</tr>
<tr>
<td>The professional development had clear objectives and essential questions that made me critically think, problem solve, and work collaboratively to accomplish the objectives.</td>
<td>4.37</td>
</tr>
<tr>
<td>The purpose of this PD motivated me to learn new content knowledge or gain skills because I genuinely found the PD’s topic, Driving Question, and tasks to be relevant and meaningful.</td>
<td>4.31</td>
</tr>
<tr>
<td>I engaged in a group process of identifying relevant content, data, and tools that I previously learned and formulated relevant questions to guide my new learning.</td>
<td>4.18</td>
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