



College of Education and Affiliated Programs
Annual Assessment Report Template – Fall 2012
Math Education

Background

1. Describe your program (enrollment, number of faculty, general goals). Have there been any major changes since your last report?

The Mathematics Education Program Goals and Mission:

The Master of Arts Degree in Education, Option in Mathematics Education program (EDME program) is a young program dating from 2009. It is a program especially designed for teachers who wish to sharpen their teaching ability in mathematics and to learn effective teaching strategies that are evidence- and research-based, practical and immediately applicable to the classroom. The mission of this program is to provide candidates with the fundamental knowledge and skills of mathematics teaching and prepares socially responsible mathematics teacher leaders for a rapidly changing, technologically rich world. It engages candidates in research, scholarly activity, and ongoing evaluation. Finally, it helps candidates understand the value of diversity as related to the National and State Mathematics Standards and prepares them for a diverse world in which they will serve and collaborate with educators and their communities. The focus of the EDME program is to equip candidates with pedagogical content knowledge that includes knowledge of mathematics curriculum, instruction, and assessment centered on knowing and promoting student mathematical thinking through modeling in mathematical representation and mathematical language.

The Alignment between EDME Courses and National and State Standards:

The EDME courses in this 30-33 unit program were developed to address the *NCTM* [National Council of Teachers of Mathematics] *Principles and Standards* (2000) and the *Mathematics Framework for California Public School* (2005). They are also aligned with the recently released *Common Core State Standards* (2010) for mathematical practice that calls for classroom teachers to prepare mathematically proficient students who make sense of problems and persevere in solving them, reason abstractly and quantitatively, construct viable arguments and critique the reasoning of others, model with mathematics, use appropriate tools strategically, attend to precision, look for and make use of structure, and look for and express regularity in repeated reasoning.

Table 1 shows the student learning outcomes (SLOs) in the EDME program, as well as the alignment of these outcomes with relevant standards. There are seven student learning outcomes from seven courses: EDME 500 (SLO1), EDME 501 (SLO 2), EDME 504 (SLO3), EDME 505 (SLO4), EDME 520 (SLO5), EDME 502 (SLO6), and EDME 685 (SLO7).

The Students in the EDME Program:

The program recruits diverse candidates who have mathematics classroom teaching experiences and seek to enhance their knowledge and skills in mathematics content and pedagogy for leadership roles in mathematics education. The focus on connecting research to teaching practices and pursuing in-depth study of effective mathematics instruction in this program helps our graduates develop expertise as effective mathematics teachers and mathematics teacher-leaders.

The program had 20 applications in 2011-13, admitted 19, and had 16 of those matriculated (Table 2). In that same year, for students in the cohort 2010-2012, 23 registered to take the comprehensive exam (Table 3). The program also graduated 22 students in 2010-12 (Table 5).

The Faculty in the EDME Program:

Currently there are three tenure track faculty members and an additional part-time faculty member who teach in the EDME program. Among the three tenure track faculty members, two are full professors, and one is associate professor. The faculty members who teach in the EDME Mathematics Education Graduate Program are: Dr. Shuhua An, Dr. Ella Burnett (retired in spring 2013) from the Teacher Education Department, and Dr. Babette Benken from the Mathematics & Statistics Department (See Table 6).

There is also a part-time faculty member who has a high level of expertise in mathematics content, mathematics instruction, teacher education, and research in mathematics education. The well-qualified part-time faculty member is a backup of the regular faculty in the EDME Program.

Table 1*Program Student Learning Outcomes and Relevant Standards*

	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5	Outcome 6	Outcome 7
SLOs	Describe contemporary issues in mathematics education addressed in NCTM and California principles and standards.	Design various assessments, interpret, and use assessment results for planning and teaching mathematics.	Apply research-based instructional strategies in teaching.	Integrate contemporary technologies in mathematics planning, teaching, and assessment at the K-8 level.	Integrate pre-algebra and algebra content and pedagogy in K-8 classrooms.	Design research in their own teaching settings relating to mathematics education.	Collect, analyze and interpret data related to research questions.
Signature Assignments	Literature Review	Action Research	Lesson Study	Technology Integration	Children Algebra Thinking	Research Design	Manuscript/ Report
Conceptual Framework	Leadership; Scholarship; Advocacy	Effective Pedagogy; Evidence-based Practices	Effective Pedagogy; Collaboration; Leadership	Effective Pedagogy; Innovation	Evidence-based Practices	Scholarship	Evidence-based Practices; Scholarship; Advocacy
CSULB Learning Outcomes	Engaged in global and local issues; Integrating liberal education	Well-prepared; Knowledge and respect for diversity	Well-prepared; Collaborative problem solving	Collaborative problem solving	Knowledge and respect for diversity	Well-prepared; Engaged in global and local issues	Engaged in global and local issues
NCATE	Professional knowledge and skills, Professional dispositions	Pedagogical content knowledge, Student learning	Content knowledge, Pedagogical content knowledge	Content knowledge, Pedagogical content knowledge, Student learning	Pedagogical content knowledge, Professional knowledge and skills	Professional knowledge and skills, Student learning, Professional dispositions	Professional knowledge and skills, Student learning, Professional dispositions

Table 2

Program Specific Candidate Information, 2011-2012 (snapshot taken Su12) – Transition Point 1 (Admission to Program)

	Number Applied	Number Accepted	Number Matriculated
TOTAL	20	19	16

Table 3

Program Specific Candidate Information, 2011-2012 (snapshot taken Su12) – Transition Point 2 (Advancement to Culminating Experience)

	Number
Comps¹	23

Table 4

Comprehensive Exam Results, 2011-2012 (snapshot taken Su12)

	Number
Passed	23
Failed	0
Total²	23

Table 5

Program Specific Candidate Information, 2011-2012 (snapshot taken Su12) – Transition Point 3 (Exit)

	Number
Degree	22

¹ This is data on the number of students who *applied* to take the comprehensive examination in summer 2011, fall 2011. The data include students who may not have taken or passed the examination(s).

² The number of pass + fail does not equal the number of students who advanced to take the comps (Table 3) because some students who have registered for the exam do not attempt it. This data reflects number of attempts at one or more parts of the comprehensive exam in summer 2011, fall 2011, or spring 2012. Individuals who failed all or part of the exam and chose to retake it during AY 11-12 may be accounted for twice.

Table 6

Faculty Profile 2011-12³

Status	Number
Full-time TT/lect.	3
Part-time Lecturer	1
Total:	4

2. How many of the total full- and part-time faculty in the program reviewed and discussed the assessment findings described in this document? Please attach minutes and/or completed worksheets/artifacts to document this meeting.

In fall 2012, two faculty members (one full-time and one part-time) who taught EDME courses participated in the data discussion meetings. They reviewed and discussed the assessment findings and related documents (SLO data, Results of Exit Survey, SLO rubrics, Program survey, and course syllabi (see the meeting minutes in Appendix A).

Data

3. Question 3 is in 2 parts focused on *primary* data sources related to: student learning and program effectiveness/student experience:
 - a. Candidate Performance Data: Provide *direct* evidence for the student learning outcomes assessed this year and describe how they were assessed (the tools, assignments, etc. used). Describe the process used for collection and analysis. Present descriptive statistics such as the range, median, mean, percentage passing as appropriate for each outcome.

Table 7 highlights the seven program student learning outcomes and the description of the signature assignments that measure those learning outcomes for cohorts 2010-2012 and 2011-2013 in the academic year of 2011-2012.

³ Faculty numbers reflect headcounts of any faculty member teaching a course in the program for the prior academic year (summer through spring). Faculty who teach across multiple programs will be counted in each program.

Table 7*Program Student Learning Outcomes and Signature Assignments*

Student Learning Outcomes	Student Learning Outcomes Description	Signature Assignment(s)	Description of the Assignment
1	Describe contemporary issues in mathematics education addressed in NCTM and California principles and standards.	EDME 500	Candidates write a literature review in mathematics education. The purpose of the literature review is to understand contemporary issues in mathematics education addressed in NCTM and California principles and standards.
2	Design various assessments, interpret, and use assessment results for planning and teaching mathematics	EDME 501	Candidates will work on an action research project that engages them in the inquiry process of developing assessment instrument, collecting, analyzing and interpreting student assessment data. The purpose of this action research is to help candidates learn and demonstrate their understanding of how summative assessment influences their classroom instruction.
3	Apply research-based instructional strategies in teaching.	EDME 504	Candidates will develop a math lesson study in the area of algebra with their grade level peers. The purpose of this lesson study is to plan standards-based mathematics instruction using different models and identify effective teaching approaches in mathematics instruction from collaborating with their colleagues.
4	Integrate contemporary technologies in mathematics planning, teaching, and assessment at the K-8 level.	EDME 505	Candidates design a math lesson plan using web quest. They address objectives, standards, materials, motivation ideas, teaching and learning strategies, procedures of the activity, exemplified of it, and the evaluation approach
5	Integrate pre-algebra and algebra content and pedagogy in K-8 classrooms.	EDME 520	Candidates design probing questions to assess and develop students' algebra thinking. The purposes of this case study are to understand challenges in children's algebra learning and to develop developmentally appropriate probing questions in an algebra lesson to support struggling students.
6	Design research in their own teaching settings relating to mathematics education.	EDME 502	Candidates develop a research proposal in their own teaching settings relating to mathematics education. The purpose of this research proposal is to apply knowledge and skills of research to design a research plan directly relating to mathematics teaching or learning.

7	Collect, analyze and interpret data related to research questions.	EDME 695	Based on the research proposals in mathematics education, candidates collect, analyze, and interpret data related to research questions, and write the final research report in the chapter form. The purpose of this final report is to apply knowledge and skills of research to analyze, interpret, and discuss the findings from data collected in teaching practice
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Figure 1 shows the comparison of overall percentage of scores ranging from 0 to 4 points between five program SLOs. The results from Figure 1 indicate that all scores of SLO2 are the 4- point, a majority of scores of SLOs 3, 4, & 5 fall in the 4-point range; about 20% of scores of SLOs 1, less than 10% of scores of SLOs 4 & 5 and less than 5% of scores of SLOs 3 falling in the 3-point range. No student had the mean score below 3-point with SLOs 1-5.

Figure 1

AY11-12 SLO Comparison

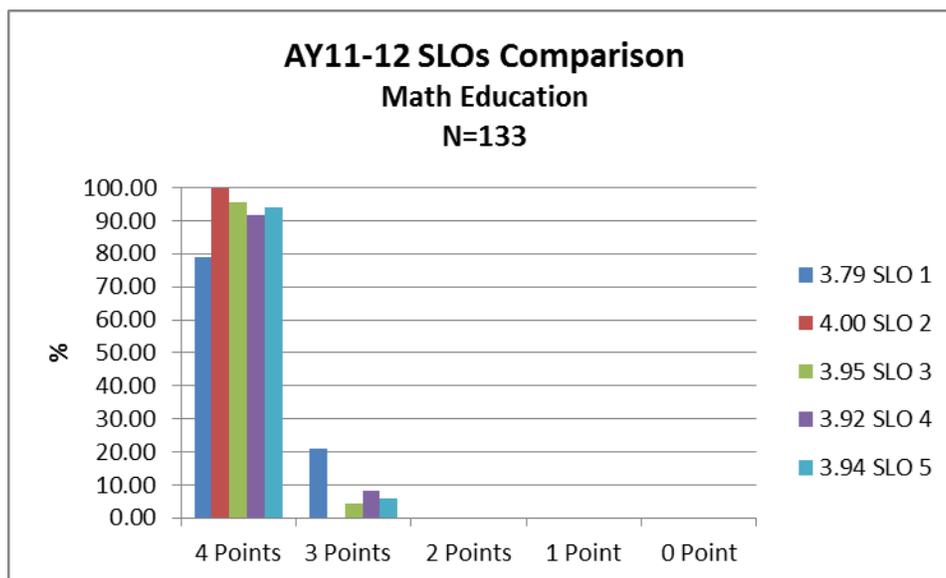
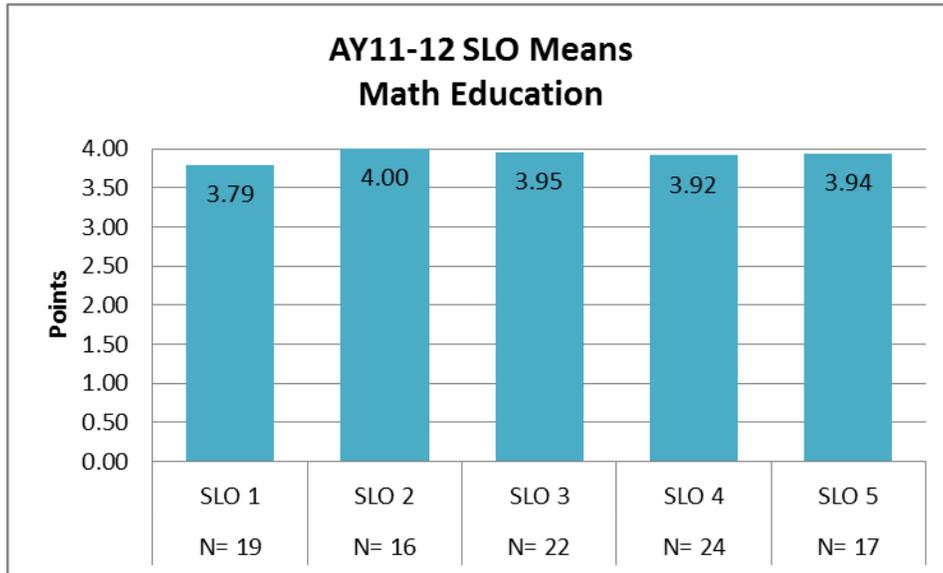


Figure 2 provides mean scores for each of the five program SLOs. It shows SLO 2 has the highest mean scores at 4, followed by SLO 3, SLO 5, SLO 4, and SLO 1 that has the lowest mean score at 3.79.

Figure 2

AY11-12 SLO Means



The following Figures 3 to 8 show the percentage of mean scores ranging from 0 to 4 points for each program SLO.

Figure 3 indicates that a total of 15 students scored at a 4 on describing contemporary issues in mathematics education addressed in NCTM and California principles and standards. Four students scored a 3 with the SLO 1.

Outcome 1: Describe contemporary issues in mathematics education addressed in NCTM and California principles and standards.

Figure 3

AY11-12 Score Distribution-SLO 1

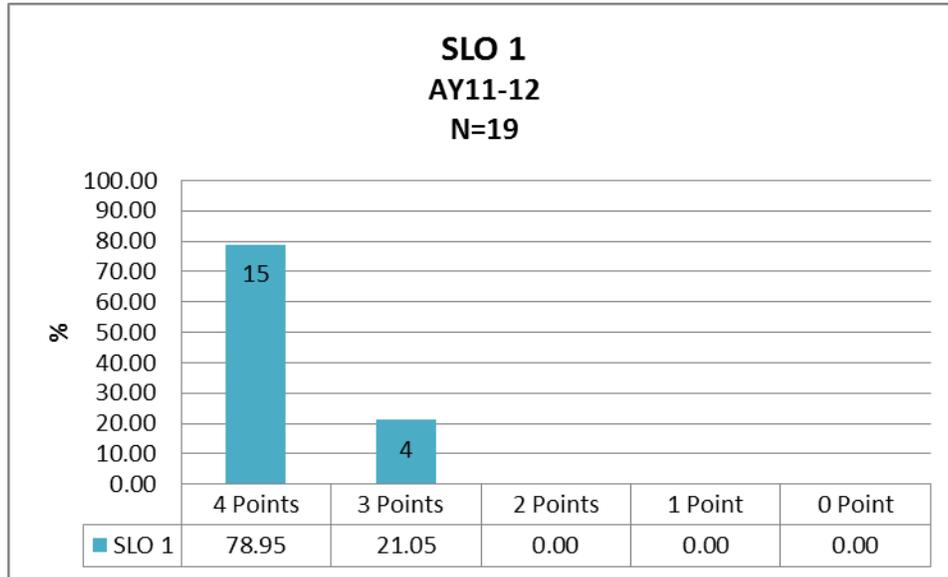


Figure 4 below shows that a total of 16 students scored a 4 on designing various assessments, interpreting, and using assessment results for planning and teaching mathematics. No student had the mean score below 4-point with SLOs 2.

Outcome 2: Design various assessments, interpret, and use assessment results for planning and teaching mathematics.

Figure 4

AY11-12 Score Distribution-SLO 2

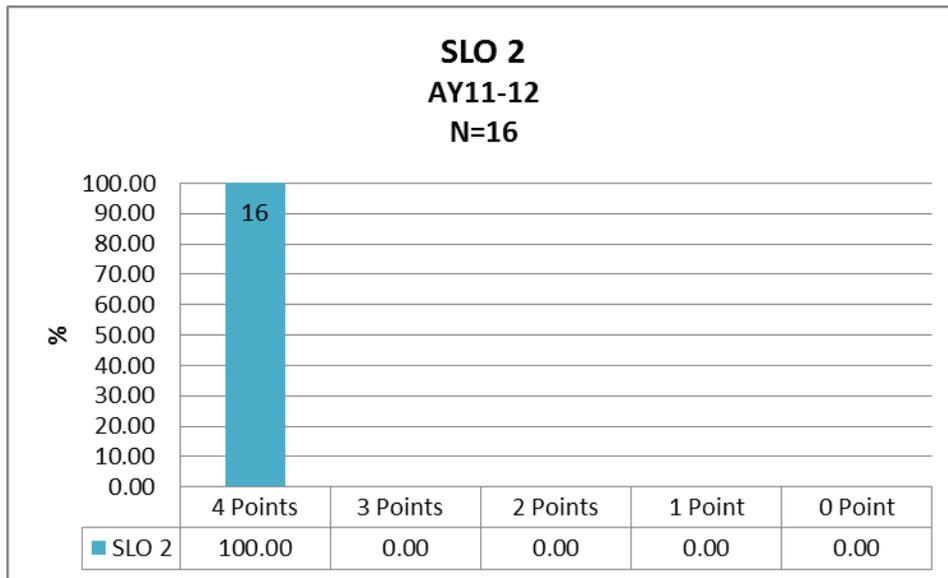
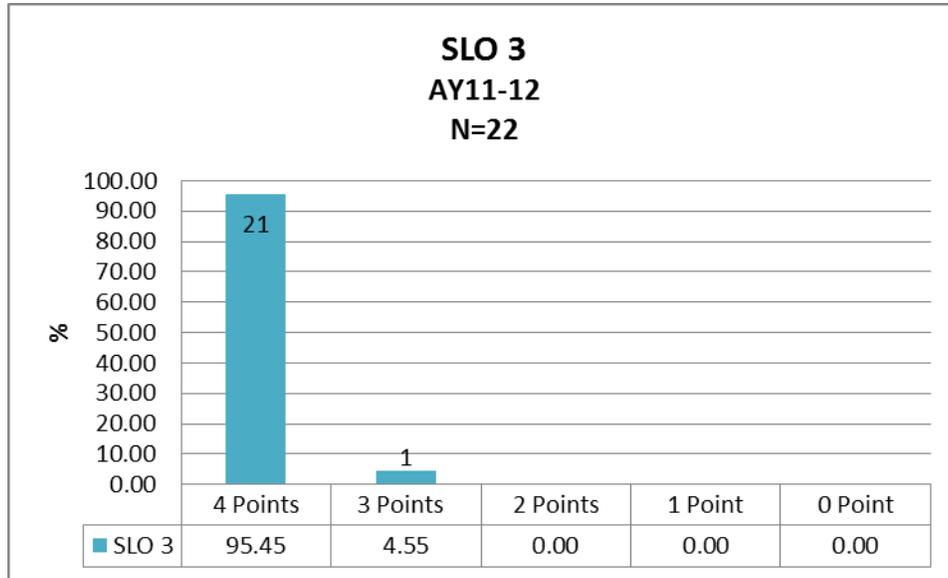


Figure 5 below shows that a total of 21 students scored a 4 on applying research-based instructional strategies in teaching. Only one student scored a 3, and no student had the mean score below 3-point with SLOs 3.

Outcome 3: Apply research-based instructional strategies in teaching.

Figure 5

AY11-12 Score Distribution-SLO 3



Results from Figure 6 show that a total of 22 students scored a 4 on integrating contemporary technologies in mathematics planning, teaching, and assessment at the K-8 level; only two students scored a 3 with the SLO 4.

Outcome 4: Integrate contemporary technologies in mathematics planning, teaching, and assessment at the K-8 level.

Figure 6

AY11-12 Score Distribution-SLO 4

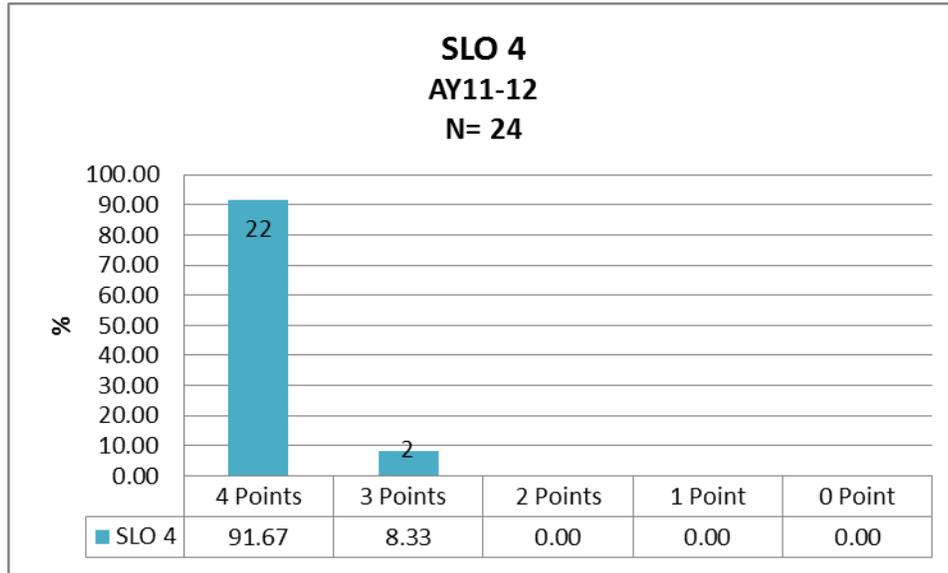


Figure 7 below indicates that about 95% of students scored a 4 on integrating pre-algebra and algebra content and pedagogy in K-8 classrooms; only one student scored a 3 with the SLO 5.

Outcome 5: Integrate pre-algebra and algebra content and pedagogy in K-8 classrooms.

Figure 7

AY11-12 Score Distribution-SLO 5

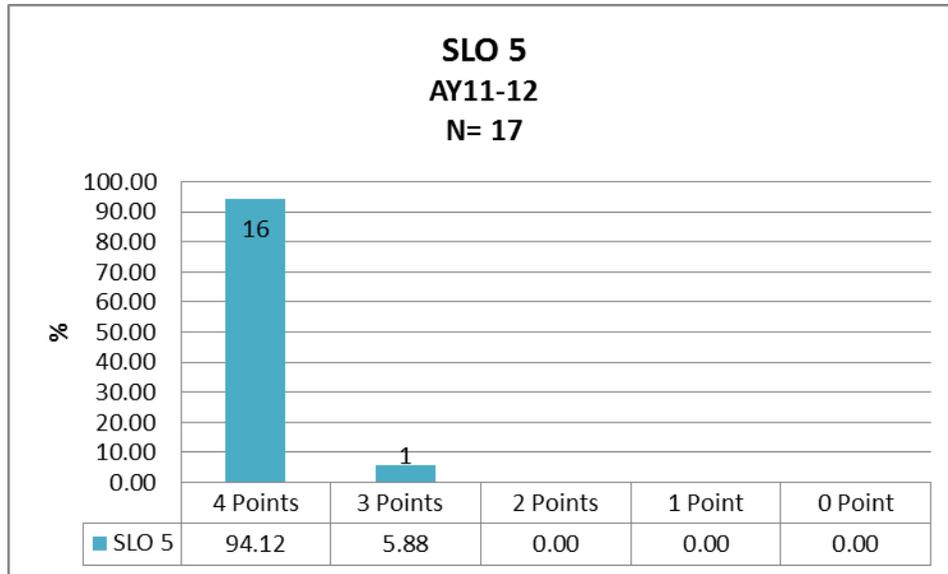


Figure 8 shows that all 13 students scored a 4 on designing research in their own teaching settings relating to mathematics education with the SLO 6.

Outcome 6: Design research in their own teaching settings relating to mathematics education.

Figure 8

AY11-12 Score Distribution-SLO 6

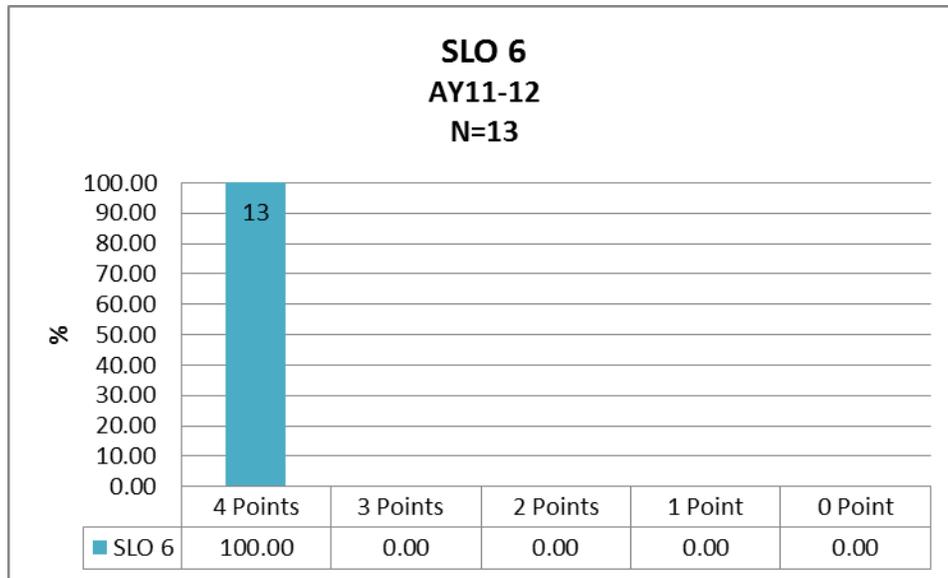
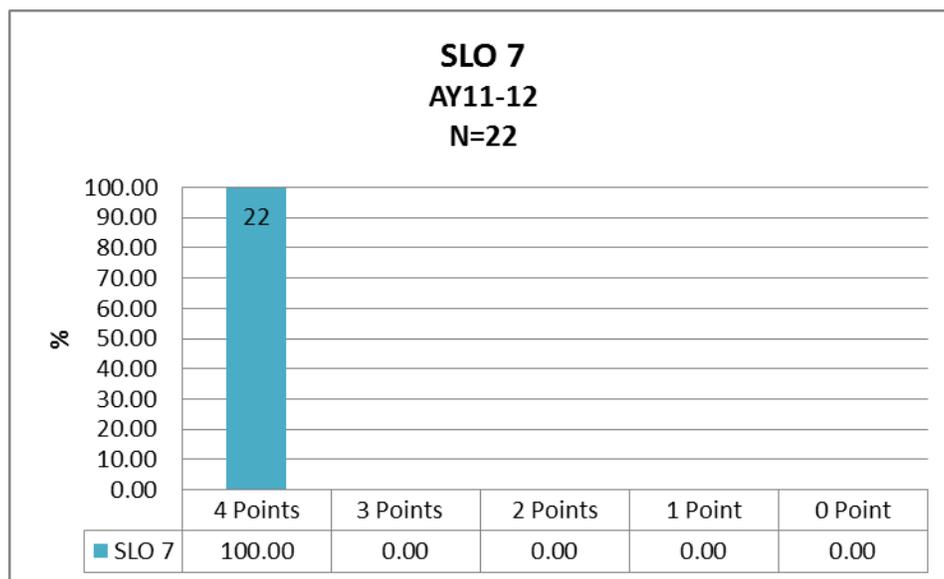


Figure 9 indicates that all 22 students score a 4 on collecting, analyzing and interpreting data related to research question with the SLO 7.

Outcome 7: Collect, analyze and interpret data related to research questions.

Figure 9

AY11-12 Score Distribution-SLO 7



- b. Program Effectiveness Data: What data were collected to determine program effectiveness and how (e.g., post-program surveys, employer feedback, focus groups, retention data)? This may be indirect evidence of student learning, satisfaction data, or other indicators or program effectiveness. Describe the process used for collection and analysis. Present descriptive statistics such as the range, median, mean, or summarized qualitative data, for each outcome.

In later spring 2012 a general Exit Survey by the College of Education was distributed to candidates in the last semester of the program coursework for the cohort 2010-2012. A total of nine candidates responded to the survey, representing about 41% of all students in the Mathematics Education Program.

The results from the Exit Survey show that the increased rating in all categories compared to the results of the 2011 survey. For example, 20% of candidates were able to seek program advising weekly from either a staff or faculty member during the program compared with 0% from the 2011 survey (See Results of Question 5).

In general, candidates felt satisfied with program advisement from faculty and the advisor's knowledge of the program requirements (See Results of Question 6).

Candidates indicated a higher level of satisfaction with instructors' using technology and media to effectively promote learning in instruction (78%) and their expectation for candidates to use instructional technology and media in completing our assignments (78%) compared to the previous report (40% and 60%). Especially, candidates recognized that they had sufficient opportunities to learn about using computer technology to enhance their academic and professional work (See Results of Question 8).

Specifically, 100% of candidates indicated using technology in the following areas: they are able to locate online resources in their field; they use technology ethically and responsibly (accessibility, fair use, security, safety, etc.); they are able to evaluate the reliability and quality of online resources; they are able to use technology to transform the teaching and learning process. In addition, they indicated that their academic and professional work is enhanced by the use of technology (See Results of Question 10).

About 89% of candidates agreed the importance of acting as a leader to promote learning and success for all students, collaborating with colleagues and community organizations to support school/program improvement and engaging in an ongoing process of inquiry to support and improve their practice. In addition, a majority of candidates believed the importance of using research- and evidence-based practices in their professional work, and the importance of reading, understanding, interpreting and applying high quality research in their professional work

(See Results of Question 12).

Most candidates agreed that the program contributed to their ability to use research- and evidence-based practices, read, understand, interpret and apply high quality research in their professional work, and engage in an ongoing process of inquiry to support and improve their practice (See Results of Question 14).

A majority of candidates showed a high level of agreement with the course work that prepared them to connect professional standards to the latest developments in the field and their practice, and facilitated the reflection on their professional values and dispositions and on their learning in a way that enhanced their growth and development (See Results of Question 16).

About 89% of students indicated that they had experience in fieldwork or clinical work in the program (See Results of Question 18). Most candidates showed a high level of agreement with the course work that encouraged them to reflect on their content and professional knowledge and professional dispositions through their fieldwork/clinical experiences. They also showed a high level of agreement with their course work that provided the opportunity to work collaboratively with others to both receive and give feedback on practice during their fieldwork/clinical experiences, and their fieldwork/clinical experiences helped them develop strategies for serving all students/clients to promote their learning and success (See Results of Question 19).

Most candidates strongly agreed that the program facilitated the development of their critical thinking and problem solving skills, prepared them for professional practice, helped them develop or refine their professional dispositions in a way that will allow them to serve all students, helped them develop the ability to link their intervention plan to students' experiences and cultures, prepared them to teach and engage all students, including English language learners and those with special needs. They also indicated that they had the opportunity to work collaboratively with others to both receive and give feedback on practice during their fieldwork/clinical experiences (See Results of Question 21).

Overall, candidates said that the EDME program is an "excellent program!" and they already applied their knowledge of research in their field. They also provided suggestions for the program to better use

technology to improve learning on availability of technology related to field on campus, teaching more technology, and providing more workshop or open lab hours for students.

4. OPTIONAL: You may provide *additional* information (e.g., other data, copies of letters of support from granting agencies or school staff, etc.) about candidate performance, the student experience or program effectiveness used to inform programmatic decision making. This may include quantitative and qualitative data sources.

Program Post-Survey

The program post-survey is used for the program to assess the effectiveness of course assignments, instruction, and student learning. The EDME program provided the program survey to the cohort 2010 – 2012 in spring 2012. 22 candidates responded the survey and results of the parts 1 to 4 were shown in Tables 8 to 10.

Results of Part 1

Overall, candidates indicated that the EDME program highly prepared or well prepared them on research, teacher knowledge, and assessment. Specifically, about 96% of candidates indicated that the EDME program highly prepared or well prepared them to engage in research to inform their practice and to grow as future scholars. About 96% of candidates agreed that the EDME program highly prepared or well prepared their pedagogical content knowledge and content knowledge in mathematics at their teaching level. In addition, more than 95% of candidates indicated that the EDME program highly prepared or well prepared them to know their students' math thinking and assess their students' math learning; more than 90% of candidates agreed that the EDME program highly prepared or well prepared them to value diversity among their students and prepared them to be math teacher leaders. Twelve items had high responses on the well or highly prepared choices (more than 80%). However, two areas had low responses in highly prepared or well prepared: preparation on teaching ELL students (68%) and preparation on teaching Special Ed or students with learning difficulties in math(73%).

Table 8*The Results of the EDME Program Survey*

Teacher Preparation	Highly prepared	Well prepared	Adequately prepared	Poorly prepared	Not prepared
How well do you feel the EDME program that you went through prepared you to plan math instruction?	59% (13)	27. 27% (6)	13. 63%		
How well do you feel the EDME program that you went through prepared you to teach mathematics?	54. 54%	27. 27%	18.18%		
How well do you feel the EDME program that you went through prepared you to know your students' math thinking and assess their math learning?	68. 18%	27. 27%	4. 54%		
How well do you feel the EDME program that you went through prepared you to integrate technology in teaching mathematics?	40. 9%	40. 9%	13. 63%	4. 54%	
How well do you feel the EDME program that you went through contribute to your knowledge on the international perspective in math education?	54. 54%	31. 81%	13. 63%		
How well do you feel the EDME program that you went through prepared you to value diversity among your students?	50%	40. 9%	9.09		
How well do you feel the EDME program that you went through prepared you to teach ELL students?	31. 81%	36. 36%	27. 27%	4. 54%	
How well do you feel the EDME program that you went through prepared you to teach Special Ed or students with learning difficulties in math	22. 72%	50%	22. 72%	4. 54%	
How well do you feel the EDME program that you went through prepared you to be a math teacher leader?	59%	31. 81%	9.09		
How well do you feel the EDME program that you went through prepared you to engage in research to inform your practice?	72. 72%	22. 72%	4. 54%		
How well do you feel the EDME program that you went through prepared you to grow as a future scholar?	72. 72%	22. 72%	4. 54%		
How would you rate your content knowledge in mathematics at your teaching level?	81. 81%	13. 63%	4. 54%		
How would you rate your pedagogical content knowledge in teaching mathematics?	50%	45. 45%	4. 54%		

Results of Part 2

The second part of the program survey asked candidates to indicate the amount of their learning from each EDME course. Table 9 shows that about 90% to 100% of responses from seven courses indicated that they learned quite a bit or everything in most courses; about 87% of responses indicated that they learned quite a bit or everything from EDME 550 and EDME 505; about 68% of responses indicated that they learned quite a bit or everything from EDME 500 course.

Table 9

Learning from Individual Course

Learning from Each Course: Rate your learning from each course in the EDME program	Everything	Quite a bit	About half	Very little	Nothing
EDME 550 Global Perspectives in Math Ed, Summer 2011	40. 9%	45. 45%	13. 63%		
EDME 520 Algebra: Research-based Pedagogy, Summer 2010	45. 45%	50%	4. 54%		
EDME 500 Contemporary Issues in Math Ed, Fall 2010	36.36%	31.81%	22. 72%	4. 54%	4. 54%
EDME 503 Advanced Methods in Teaching Math I, Spring 2011	50%	50%			
EDME 501 Assessment in Teaching Math, Fall 2010	54. 54%	40. 9%	4. 54%		
EDME 504 Advanced Methods in Teaching Math II, Fall 2011	54. 54%	36.36%	9.09		
EDME 502 Research in Math Teaching and Learning, Spring 2011	59.09%	36.36%	4. 54%		
MTED 500 Advanced Perspectives of Foundational, Fall 2011	54. 54%	40. 9%		4. 54%	
EDME 505 Technology in Teaching Math, Spring 2012	40. 9%	45. 45%	9.09	4. 54%	
EDME 695 Seminar in Education, Spring 2012	54. 54%	45. 45%			

Results of Part 3

Table 10 shows the results of the part 3 of the program survey. The results show students’ responses on the valuable and helpful assignments or projects from each course.

Table 10

Valuable and Helpful assignments/Projects from Each Course

Courses/ Semester	Why? Please indicate the specific assignments or projects that were valuable and helpful to your teaching practice or professional growth.
EDME 520 Algebra: Research- based Pedagogy, Summer 2010	<p>Math Clinic</p> <ul style="list-style-type: none"> - Working with students in the algebra clinic was a great start to the program. I learned from other teachers by observing and sharing. - Summer Clinic-it provided us the chance to work with students and provide intervention. Hands on, got to work with a real student one on one tutoring. - I was able to work with a student who had a condition which I do not see in my classes. It gave me an appreciation for SpEd teachers. - Creating an individual plan for a student with special needs, I was able to work closely with a psych student. I liked collaborating with the ed psych student. I learned a new assessment strategy from her and it was great to see it implemented and analyzed. - Learning more about intervention, Intervention Plan for Math Clinic, working with the student, watching other grad students <p>Case Study</p> <ul style="list-style-type: none"> - Case Study-It allowed me to practice assessing and correcting student work and errors. I enjoyed &

	<p>learned from case study</p> <p>Manipulatives</p> <ul style="list-style-type: none"> - Manipulative projects were helpful. I gained lots of new ideas and strategies I implemented in my class.
<p>EDME 550 Global Perspective s in Math Ed, Summer 2011</p>	<p>East Meet West</p> <ul style="list-style-type: none"> - East Meet West- The exchange of students and interactions between the cultures were amazing. It was great to learn from teachers from China. Loved it! - Engaging with students and teachers with other cultures allowed for cultural awareness and allowed me to see the differences in the ways we teach and learn mathematics. I liked to opportunity to meet, interact with and teach students from China. - In my opinion this was one of the most valuable things that I learned from the program. Seeing how other teachers teach math was very helpful - By far the best class. Working hands on with Chinese students, learning from them and their teachers and being a part of their experience in visiting the U.S. is great! - Watching the various Chinese lessons helped me gain new ideas and strategies. Be able to see teachers in action teaching via video lessons was valuable experience; - TIMMS Study and other culture math very interesting. <p>Teaching</p> <ul style="list-style-type: none"> - Cultural lesson plan – I was able to teach Chinese students and see the interactions between the American and Chinese students - Hands on, got to plan and participate in activities with students and teachers and teaching lessons to both groups of students - Group Lesson for Chinese and American students - We teaching lessons to Chinese children were eye opening as a teacher and an observer teaching other teachers teach.
<p>EDME 500 Contemporary Issues in Math Ed, Fall 2010</p>	<p>Literature Review</p> <ul style="list-style-type: none"> - Writing the theme paper and literature review helped me gain a clearer understanding of how to write literature reviews for my research. - I loved the writing assignment in which I learned about standardized testing and its origins. When I tell others about how testing originated they too are fascinated. <p>Important Issues</p> <ul style="list-style-type: none"> - Learned issues plaguing us as a nation in mathematics and ideas on what can be done to improve education in this country. - We were able to discuss some interesting topics that were relevant to our teaching. - Equalities in teaching math are important issues - Culture in classroom. Bias and what we expect from the students. <p>Teaching</p> <ul style="list-style-type: none"> - Game presentation because it's great to get new ideas to use in the classroom - I liked playing multicultural game/ manipulative - Being exposed to so many math games from different cultures allowed me to introduce more to my students. - Learned how to research, plan higher level thinking lessons <p>Technology Interview</p> <ul style="list-style-type: none"> - Technology Interview- It was great to interview a fellow teacher and see how they used technology in their classroom. It gave me ideas of things I would like to incorporate into my classroom. I was also able to find time to have generic technology questions answered that I otherwise, might not have found the time to ask.

<p>EDME 501 Assessment in Teaching Math, Fall 2010</p>	<p>DETECT</p> <ul style="list-style-type: none"> - DETECT- DETEC was valuable assignment to me. I enjoyed doing the DETECT assignments. It was a great way to consistently asses and correct student errors. Sometimes when we grade homework we overlook these errors. This assignment made me realize that I need to pay closer attention. - DETECT-I liked this assignment a lot because I was able to learn to conduct an error analysis and reteach to help my students. <p>Assessment</p> <ul style="list-style-type: none"> - Learned how to assess and learned how to determine students' capabilities in the math classroom. - Assessment and its different types, open-ended, conceptual, multiple choices. Helpful in our classrooms. - It was helpful to see that all assessments are not good assessments, and to learn how to distinguish between the two. - I particularly liked the analysis of student test scores that looked at problem validity. - Assessing students and looking at assessments to analyze what needs to be done/fixes is a great tool to use in the future. - Mathematics Assessment Project- This was a great segway into our action research assignment. It gave us experience in writing before we wrote our first 3 chapters. - Creating assessment and checking content validity Creating MSAWs, I haven't had an opportunity to so before. <p>CST analysis</p> <ul style="list-style-type: none"> - This was a great class. I enjoyed creating my own version of the CST. I plan on using it every year. - I learned about reliability and validity. Analyzing the CST questions and distractors has helped me create test questions that are effective in test preparation for my students. I liked error analysis. <p>Disposition Assignment</p> <ul style="list-style-type: none"> - Disposition Assignment - This is something that all teachers should do. I think it is something that I will carry with me forever. We overlook the importance, but in my opinion, it is essential in teaching any subject.
<p>EDME 503 Advanced Methods in Teaching Math I, Spring 2011</p>	<p>Lesson Study</p> <ul style="list-style-type: none"> - Working on lesson studies with my partner was a great way to learn from them and from what we did. - I always learn when I watch myself teach on video. It is great to see other teachers model their lessons and trade feedback. - Videotaping my lessons and reflection on my lessons and peers helped me improve my teaching. - Learned how to research, plan higher level thinking lessons - using lesson template, peer review <p>MSA Project</p> <ul style="list-style-type: none"> - Learned MSAW and other methods of teaching mathematical concepts. - MSA helpful to prepare for Common core standards. - Seeing other ways to teach math was very helpful. - I really enjoyed the activities that promote conceptual understanding of multiplication and division, especially fractions. <p>RTI Case Study</p> <ul style="list-style-type: none"> - Writing chapter 2 and doing the intervention project allowed me to seek ways to enhance my teaching techniques. - RTI because I enjoyed getting feedback from my partner, although we didn't really need to do the video portion - RTI Case study: intervention planned around one student. I enjoyed doing the Rtl assignment. - I was able to focus on one student in order to assess and correct his misconceptions. This is what I would like to be able to do for all students! - Case Study- I liked being able to help my student who was having the most difficulties. I think that it really helped to get to know her as a student and learner and it helped me to better teach her. <p>Manipulative Presentations</p>

	<ul style="list-style-type: none"> - It is always great to get ideas from our peers on new math activities and manipulatives in the classroom. <p>Dispositions – it was my first time using a disposition survey and analyzing it.</p>
<p>EDME 504 Advanced Methods in Teaching Math II, Fall 2011</p>	<p>Research Project</p> <ul style="list-style-type: none"> - Literature Review- This was helpful in aiding us in our action research. - Learned how to research, plan higher level thinking lessons <p>Disposition project</p> <ul style="list-style-type: none"> - It was in this course when the disposition information finally came together and I was able to get a more clear understanding of what we were to do and how it was supposed to help us in our everyday teaching. - The disposition project allowed me to practice writing using APA format and allowed me to find research and gain a better understanding of my students as individual learners. - Disposition paper was good practice for real paper - Entering student dispositions in SPSS was a great way to learn more about the software. - Going over short documents and looking at how to correct mistakes in APA was helpful. <p>Classroom Management-</p> <ul style="list-style-type: none"> - I was able to get great ideas from teachers from all areas and grade levels on their classroom management styles. - Sharing classroom management strategies <p>Teaching and Lesson Study for CCSS Project</p> <ul style="list-style-type: none"> - CCSS projects – I had heard about Common Core Standards but have yet to apply them until now. - Able to write very detail and scripted lesson plans, especially based on Common Core; - Using common core standards - Chinese lesson reviews - The on-line class was really cool but I wouldn't want to do that often. - Seeing other ways to teach math was very helpful. - Review of math concepts - Learned more methods of teaching mathematic in the classroom. - Creating MSA for standards in my grade level and given it to my students. It made me realize how poorly they are able to model their thinking.
<p>EDME 502 Research in Math Teaching and Learning, Spring 2011</p>	<p>Action Research</p> <ul style="list-style-type: none"> - Learned how to do math Action Research in the classroom and have it be effective. - Writing the first three chapters of the dissertation was extremely helpful and useful. We were able to use it later on in our other classes. - Chapters 1-3- This helped in the final action research project. I am glad we completed the project in stages. Otherwise, it would have been more overwhelming. - The experience of putting the results into APA style and stating results in the proper format really helped when writing the paper. - Assignments #2 & 3 because they were a good foundation for the action research project. I enjoyed learning the difference between summative and formative assessment. I enjoyed beginning my research. - Article Critique - This class really pushed me to prepare for my action research because I had a format to follow. The power point we created to present our work has been a great reference for future assignments. <p>SPSS Assignments</p> <ul style="list-style-type: none"> - SPSS – I've never used this program, it definitely made using Excel seem like a breeze - Readings were interesting, learned from them. - SPSS assignments- having these assignments made it easier to understand how to run SPSS programs and to interpret the tests. This was the foundation for completing the action research project. - The sheet given that showed how many different sets of data are analyzed was helpful. - Working on SPSS is great practice; we did a lot of that.

<p>MTED 500 Advanced Perspective s of Foundation al., Fall 2011</p>	<ul style="list-style-type: none"> - SPSS practice helped very much in writing action research <p>Content</p> <ul style="list-style-type: none"> - New and old math concepts – I was able to review some math I learned long ago and stopped using and learned new concepts as well to teach older student - Content- I felt that I needed a content course in order to help me feel more prepared for teaching a higher-level math. Also good refresher for CSET. - Content- It was great to get a refresher of some of the mathematics content I haven't seen or used in a while since I teach in the elementary setting. I also enjoyed learning the multiple ways each person solved the problems. - This class brought back so much that I learned when I was younger. I forgot a lot and it was a great review. - Started out fearful of doing the algebra. Ended up getting excited that I was doing algebra again. - Everything. I loved that it was a content class and actually had math involved. <p>Assignments and Teaching</p> <ul style="list-style-type: none"> - Weekly investigation assignments allowed me to sharpen and strengthen my understanding of math concepts. - In class activities - I liked the in class assignments that gave me an opportunity to explore the concepts and have help readily available. - Fun class, learned new ways to teach some difficult concepts. - Good balance between math content and pedagogy - Learned how to research, plan higher level thinking lessons <p>Final Paper</p> <ul style="list-style-type: none"> - Literature Reviews - Final paper: deepen understanding on one mathematical concept and - Group Paper (Exponents)
<p>EDME 505 Technology in Teaching Math, Spring 2012</p>	<p>Children's Literature Book</p> <ul style="list-style-type: none"> - Creating the children's literature book and website were the most helpful assignments. I will definitely implement and use them within my classroom. - Children's Book-I enjoyed this assignment a lot. I think this is a great assignment to give to the students as well. <p>WebQuest.</p> <ul style="list-style-type: none"> - WebQuest – I searched different WebQuests but never have I ever made one. It wasn't bad or too hard to do. I had never done a webquest or a video. It was helpful to do those. - WebQuest- This was a great assignment! I was able to create mine based upon an upcoming standard and I was able to implement it in the classroom immediately. - I enjoyed completing my webquest and finding out that my district has a similar program "EdLine" - Websites, WebQuests - WebQuest: Can assign projects with all resources over internet <p>Technology Assignments</p> <ul style="list-style-type: none"> - All technology assignments were hands on and helpful - I learned so much working on technology assignments; creating my own website, creating a storybook and I made my own movie for the first time! - Tech assignments were interesting - All the assignments were useful, relevant and enjoyable for my students. - Able to integrate technology in teaching math - All were challenging & useful in the classroom. - Learned useful ideas on using technology. - Student literature book, web page, movie making. Using technology to motivate students and engage them in learning. Power point assignment- I learned so many ways to implement new things into power points and to make them fun for my students.

EDME 695 Seminar in Education, Spring 2012	<p>Action research</p> <ul style="list-style-type: none"> - Action Research- This was the culmination of everything we had done. - Final research report and individual meeting times to go over each chapter, running the various tests, etc. It was individualized and helped me improve my own research report - Research paper- apply what I have learned - Learned to appreciate putting together a research paper/an presentation. - Was very helpful in writing of the paper. - I learned a lot working on my research paper and SPSS. Learned from my mistakes. This class is where I learned SPSS the most. - Action Research helped me to be a teacher researcher through the action research project. Creating the research paper - Finishing my research was great. Finding out that my hypothesis was correct was even better. - One on one meeting. - Learned how to research, plan higher level thinking lessons <p>Collaboration and Presentations</p> <ul style="list-style-type: none"> - Collaboration with colleagues about relevant mathematical topic and research. - Math at the Beach- This allowed the cohort to come together as a whole and work on a project collaboratively. - Colloquium – I was able to share my research with others and it was the first time presenting to others and not just our class.
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Results of Part 4

The part 4 of the program survey asked candidates to answer the question “What do you like most about the EDME program? Why?” Table 11 shows the results of responses from 22 candidates.

Table 11

Program Survey 2009-2011

	What do you like most about the EDME Program? Why?
1	The courses and assignments followed the curriculum and the aspects of our research project very well. We were able to build upon our knowledge, understanding, research, and work as the semesters continued.
2	Meeting Chinese visitors; Case study; Research Paper.
3	I LOVED THIS PROGRAM.
4	The support from Dr. An and Dr. Wu. It really helped us to get through the program.
5	I feel it has educated me on instructional methodologies and helped me prepare for the Common Core Standards which will be implemented in the 2012-2013 in my district.
6	Having the opportunity to learn from the Chinese teachers and students during the summer. Being able to watch the videos of the Chinese lessons was also very enlightening.
7	Even if I did not make use of them, it was good to get emails about programs that were available to us.
8	Almost all professors were great in the program. They were helpful, caring, understanding and want you to succeed.
9	I really like that the program is a cohort. I knew from the beginning the classes I would be taking for the 2 years and I didn't have to worry about the classes being offered. I truly enjoyed learning from Dr. Wu and Dr. An. I feel that I learned so much from the program and put so much time and energy into it that I believe I truly earned a Master's degree, unlike other schools that where you complete their credential program take just one more class for your Master's.
10	I enjoyed the exposure to different types of teaching, working with some great teachers, and two wonderful professors.

11	I've had a great time. I've learned a lot. I can't really complain about anything. Was the work hard? Yes but I expected it to be. There was a level of collaboration that I had not expected but totally enjoyed.
12	Loved meeting my new friends and making very close friends. Dr. An & Wu you were amazing. Got to do my first research project and hopefully that translates into more.
13	The week with Chinese teachers and students was very interesting.
14	Professors were very understanding and extremely helpful. Prepared me very well for writing and understanding research.
15	Overall, I enjoyed working through Math Ed. Grad. Program even though it was challenging at times. Many assignments were very helpful and valuable experience for me as a teacher, because without the Program, I would have never done them on my own.
16	I like that I expanded my understanding of mathematics.
17	Program is very well organized and provides uncommon support and development of students
18	I like everything the program provided. I am really glad that I have chosen this program for my Master study.
19	This program truly prepared me to be the best math teacher I can be. Without this program, I do not know if I would have the confidence or knowledge to be a math teacher. I feel like the program instilled the key components of being a lifelong learner. I will recommend this program to everyone! I loved it!!!
20	I really liked the way the Math Ed program is set up. It is wonderful that the program is designed for the full-time teacher and even parents. I like that there is a cohort and everyone can support one another. I also liked the consistency of the days, times, and professors.
21	I learned a lot of great new things to implement into my future mathematical pedagogy.
	I enjoyed the overall layout of the cohort. Having a cohort makes a huge difference in the program. I feel that the grad students in the class had grown closer and can definitely learn from one another.

Program Impact

The unique feature of the EDME program is supporting candidates to grow professionally and scholarly in field work by focusing on leadership roles, community service learning, and global perspectives. Starting spring 2012, all candidates worked together to provide the annual professional workshops – the Math at the Beach event on the common core state standards for mathematics for CSULB pre-service teachers and local school teachers. Each year, a number of candidates also attend and present their research and lesson studies with our EDME faculty at state, national, and international conferences.

Math at the Beach- Leadership Roles and Community Service

In spring 2013, all candidates from two EDME cohorts 2010-2012 and 2011-2013 worked together and provided the first “*Math at the Beach: Living with the Common Core Standards (CCSS)*” event with a series of workshops for more than 100 CSULB pre-service teachers and local school teachers. Their CCSS curriculum maps and unit lessons and investigation projects provided excellent examples on how to implement CCSS standards in real classrooms. Their efforts on organizing and participation in this event enhanced their leadership ability and also provided them the excellent experience in community Service (See Appendix B-CCSS Event Math at the Beach 2012).

In spring 2013, two EDME cohorts of 2011-2013 and 2012-2014 provided the 2nd “*Math at the Beach: Diving into the Common Core Standards for Mathematical Practice*” event for CSULB pre-service teachers and local school teachers, focusing on how to implement the eight Common Core Math Practice Standards using detailed examples, activities, and video lessons from their classrooms. This event was well received and served more than 100 local school teachers and pre-service teachers (See

Appendix C-CCSS Event Math at the Beach Program 2013). Dr. Joan Bissell, Director, Teacher Education and Public School Programs Office of the Chancellor California State University, attended this event. She had high comments on this Math at the Beach event and asked us to provide her all candidates' CCSS power points of presentations and their sample CCSS lessons and projects so she can share these on the CSU system website and with the funders of the 100Kin10 Research Design Competition. As the results, faculty from the EDME program was invited to participate and contribute ideas for the 100Kin10 grant proposal that provides CCSS professional developments for a local school district. The CSULB 100Kin10 proposal was funded in summer 2013.

East Meets West

The goal of the East Meets West program is to make an international experience accessible to our graduates in the EDME program through integrating a graduate course EDME 550 *Global Perspectives in Mathematics Teaching* into a Summer Teacher Institute that provides a unique opportunity for our candidates to work with children from both Chinese and U.S. groups in a dual language immersion setting. About 46 graduate students, 11 school teachers, 20 CSULB student volunteers, and 60 children from US and 62 children from China have benefited from the East Meets West program since summer 2010.

The East Meets West program engages our graduate students (K-8 classroom teachers) in an interactive face-to-face learning process: Learning effective teaching strategies from Chinese top ranked mathematics teachers and applying these strategies in teaching mathematics by working with a group of Chinese and U.S. children. Our graduates had opportunities to be involved in planning and organizing activities, working with children, observing math lessons taught by Chinese teachers and interacting with them. The graduate students also did a case study on comparing student learning, and designed and taught a series of hands-on, fun, innovative, and interactive math lessons to both Chinese and U.S. children. In addition, they evaluated their peers' instruction by providing constructive feedback for each lesson.

With the support of 2012-2013 IRA funds, we engaged 14 graduate students from the EDME 505 class in the 2012 East Meets West program. They attended planning and scheduling meetings, designed and taught a series of hands-on, fun, innovative, and interactive SDAIE (Specially Designed Academics in English) math lessons to both 24 Chinese and 17 U.S. children. The graduate students also went with the children on fieldtrips to experience real world math and science applications and observed how the two groups of children learn math differently for the case studies they developed. In addition, they observed not only local school teachers' math, science, and English integrated lessons, but also observed math lessons taught by Chinese teachers and had discussions with them about their effective teaching and learning strategies. Two graduates presented their experience in the East Meets West program at the ICME 12 conference in Seoul in summer 2012.

Overall, the East Meets West program has provided our graduate students the rich field work experiences on how to teach and learn math effectively, especially on how to best help students access learning in a dual language setting. It also broadened our students' views with regard to the diversity of ways of teaching each math in different cultures and educational systems. The program has also further connected CSULB with local and international Educational communities.

Scholarly Activity

Candidates in the EDME program have actively participated in local, national, and international conferences. For example, in summer 2012, Belva D Serrano and Lynda McCoy from the cohort 2010-

2012, Mahmut Gundogdu and Rocio Rodriguez from the cohort 2011-2013 attended and presented their math lesson studies at the 4th Classroom Teaching Research for All Students (CTRAS) in Guiline, China in summer 2012. Mahmut Gundogdu, Belva D Serrano and Lynda McCoy also attended and presented their research at ICME 12 in Seoul in summer 2012. During fall 2011 and spring 2012, faculty in EDME program invited candidates from both cohorts to attend the CTRAS Elluminate meetings to learn research ideas and methods from international scholars in five counties in the CTRAS research groups, which prepared their presentations at the 4th CTRAS Conference in summer 2012.

Analysis and Actions

5. What do the data for each outcome say regarding candidate performance and program effectiveness? Please note particular areas of strength or in need of improvement.

SLO and Exit Survey Data Analysis

Overall, the SLO data from all seven courses reveal that more than 90% of candidates performed at level 4 in their signature assignments, except SLO 1 that had about 79% of candidates perform at level 4. Students' performance was particularly strong on SLO2 – Design various assessments, interpret, and use assessment results for planning and teaching mathematics, SLO 6 –Design research in their own teaching settings relating to mathematics education, SLO 7 – Collect, analyze and interpret data related to research questions, and SLO4 -Integrate contemporary technologies in mathematics planning, teaching, and assessment at the K-8 level.

The outcomes of the SLO data show that about 79% of students performed at level 4 on SLO 1- Describe contemporary issues in mathematics education addressed in NCTM and California principles and standards. This result is consistent with the results from the program survey - about only 68% of responses indicated that they learned quite a bit or everything from EDME 500 course. The challenge of this SLO requires candidates to write a literature review on various issues in math education in their first course of the program. However, candidates learned a great deal from this assignment, as they indicated in their Program Survey, part 3. One wrote: "Writing the theme paper and literature review helped me gain a clearer understanding of how to write literature reviews for my research."

The Exit Survey reveals that the EDME program has supported candidates' learning with technology integration in instruction, and developed their beliefs on the importance of playing leadership roles in their schools and community to promote learning and success for all students. The Exit Survey also reveals that the EDME program contributed to their ability to use research- and evidence-based practices, read, understand, interpret and apply high quality research in their professional work, and engage in an ongoing process of inquiry to support and improve their practice. In addition, the Exit Survey indicates that the EDME program developed a strong connection between their professional standards to the latest developments in the field and their practice, and facilitated the reflection on their professional values and dispositions and on their learning in a way that enhanced their growth and development. A notable example of this connection is having opportunities apply what they learned in fieldwork or clinical work such as the Math Clinic and East Meets West in the program. The program not only encouraged them to reflect on their content and professional knowledge and professional dispositions through their fieldwork/clinical experiences, but also provided the opportunity to work collaboratively with others to both receive and give feedback on practice during their fieldwork/clinical experiences, and their fieldwork/clinical experiences helped them develop strategies for serving all students/clients to promote their learning and success. Furthermore, the Exit Survey reveals that the EDME program facilitated the development of candidates' critical thinking and problem solving skills,

prepared them for professional practice, helped them develop or refine their professional dispositions in a way that will allow them to serve all students/clients, helped them develop the ability to link their lesson content or treatment/intervention plan to students' experiences and cultures, prepared them to teach and engage all students, including English language learners and those with special needs.

The Exit Survey reveals candidates' comments on the EDME program as being an "excellent program!" and also reveals their suggestions for the program to better use technology to improve learning on availability of technology related to field on campus, teaching more technology, and providing more workshops or open lab hours for students.

The areas of particular concern where we would like to see student performance improve is SLO 1. In EDME 500, we need to focus more on developing student ability in writing literature reviews and help them link it to their action research projects in year two. In addition, we need to provide more open lab time for students working on technology projects, even though the program has provided at least two library workshops on research database and resources, and one on one tutorial meetings on SPSS and technology assignments.

Program Survey

The program post-survey for the cohort 2010 – 2012 in spring 2012 confirms all findings from the Exit Survey and Data Results. It reveals that candidates had received successful preparation by the EDME program. Candidates agreed that the EDME program well prepared or highly prepared them to engage in research to inform their practice and prepared them to grow as future scholars. They also agreed that the EDME program highly prepared or well prepared their pedagogical content knowledge and content knowledge in mathematics at their teaching level as well as knowledge of their students' math thinking and assessment of student math learning. In addition, candidates agreed that the EDME program highly prepared or well prepared them to value diversity among their students and prepared them to be math teacher leaders. All 12 items had high responses on well or highly prepared choice. However, two areas had low responses on highly prepared or well prepared: preparation on teaching ELL students and preparation on teaching Special Ed or students with learning difficulties in math. We need to make effort to ensure all candidates are aware explicitly that the Math Clinic project in EDME 520 is the RTI Tier 3, focusing on providing interventions to individual Special Ed or struggling students, and EDME 550 provides an opportunity for them to work with ELL students in the East Meets Program. Collaborating with EDP graduates in the Math Clinic setting in EDME 520, candidates teach their clients who are struggling in math for eight intervention sessions and produce a thick field report including diagnostic test, analysis strengths and weaknesses, design interventions, log and reflection for each session, post-test, progress monitoring chart, analysis effects of their teaching strategies, and parent report.

6. How do these findings compare to past assessment findings?

The findings show the improvement in student performances in all SLOs except SLO1. Exit Survey Data Analysis reveals the great improvement in ratings in all areas. The program survey also shows the increased percentages of rating in all 13 items on how the EDME program "highly prepared" candidates in part 1 and shows the increased percentages of rating in all courses on their learning "everything" from Individual Course in part 2 compared to the findings from the 2009-2011 report.

7. What steps, if any, will be taken with regard to curriculum, programs, practices, assessment processes, etc. based on these findings in Questions 5 and 6? Please link proposed changes to data discussed in Q5.

Table 12

Action Plan

Priority	Action or Proposed Changes To Be Made	By Whom?	By When?
1	Provide more support to students on how to write literature review – Library sessions, guest speakers, readings, and sample work from previous cohorts, and connect their literature review to their future action research projects. Develop and reinforce students' ability in writing in EDME 500, EDME 501, EDME 502, EDME 504, EDME 520, and EDME 695.	All Faculty in the EDME program	Fall 2012 Spring 2013 Fall 2013 Spring 2014
2	Continue to explicitly make all candidates aware that they learn and develop teaching strategies for Special Ed or students with learning difficulties in the Math Clinic in EDME 520, in the East Meets West Program in EDME 550, and in doing a case study on struggling students in EDME 503 or 504.	Shuhua An	Spring 2013 EDME 504 Summer 2013 EDME 550 & EDME 520
3	Add more technology skills that are practical and accessible by classroom math teachers in EDME 505; reserve more open lab sessions for students working on technology projects and provide more one on one support	Zhonghe Wu	Spring 2013 Spring 2014

Data Discussion
Mathematics Education program
Minutes

1:30 -2:30 pm, November 19, 2012
ED2-260

Participants: Shuhua An and Zhonghe Wu

1. Reviewed the results of the data and Exit Survey for the EDME program
2. Reviewed all SLOs
3. Review the data on the overall scores and subscores of the SLOs
4. Reviewed the signature assignment/rubric
5. Reviewed the program survey
6. Discussed the strengths and needs of the EDME program
7. Discussed the next steps and action

Data Analysis and Interpretation Discussion

Student Learning

- How satisfied are you with the overall performance of students on the signature assignment?

Very satisfied with student overall performance on the signature assignments compared to the results from last year. The performance of student was increased from the cohort 2009-2011 to the cohort 2010-2012.

- On what criteria or sub-skills do students seem to be doing *particularly well*?

Outcome 2: Design various assessments, interpret, and use assessment results for planning and teaching mathematics.

Outcome 4: Integrate contemporary technologies in mathematics planning, teaching, and assessment.

Outcome 6: Design research in their own teaching settings relating to mathematics education.

Outcome 7: Collect, analyze and interpret data related to research questions

The SLO data show that 100% of students performed at level 4 with these SLOs.

- On what criteria or sub-skills do students seem to be *struggling*?

Outcome 1: Describe contemporary issues in mathematics education addressed in NCTM and California principles and standards.

The SLO data show that about 79% of students performed at level 4 with the SLO1

- What about the results was surprising?

Student performance on SLO 3 was improved. More than 95% of students performed at level 4 with the SLO3.

In addition, all candidates felt satisfied with using technology in this program.

- How do findings on this outcome compare to past results on the outcome?

The findings on this outcome show overall improvement on all signature assignments except SLO 1 compared to the past results on the outcome. All concerned areas from the past report were removed - about 70% of students increased their performance at level 4 with the SLO3 and about 24% of students increased their performance at level 4 with the SLO7 in this report.

- What are the areas of particular concern where you would like to see student performance improve?

SLO1 – Describe contemporary issues in mathematics education addressed in NCTM and California principles and standards. We will provide more support to students on how to write literature review in the first EDME course and reinforce it in the later courses.

Instrument Utility

- Did the signature assignment and/or rubric you used give you the information you were seeking?

Yes.

- Do you want to make any revisions to the signature assignment and/or rubric, or the assessment process?

Yes, we plan to add one more signature assignment for EDME 503.

Programs, Courses, and Practices

- What do other data (such as program indicators) say related to your results? (For instance, how do they confirm, contradict, or add to what the direct evidence of student learning suggests?)

The EDME program survey confirms the same findings from the Exit Survey and Data Results.

- What actions (e.g., policy or curricular changes, faculty development, additional courses or extracurricular opportunities, changes in processes) might you take to improve student learning?

1. Continue to encourage students to attend the professional development workshops on writing and research provided by the college of education.
2. Continue to invite former EDME graduates to share their experiences in the program and their writing on action research projects.
3. Provide more readings and critiques on research articles in each course.
4. Develop peer support groups for student writing assignments in each course.

- Who else needs to know about these findings and next steps?

All faculty members in the Mathematics Education at the College of Education.

Closing the Loop and Moving Ahead

Priority	Action or Proposed Changes To Be Made	By Whom?	By When?
1	<p>Provide more support to students on how to write literature review – Library sessions, guest speakers, readings, and sample work from previous cohorts, and connect their literature review to their future action research projects.</p> <p>Develop and reinforce students' ability in writing in EDME 500, EDME 501, EDME 502, EDME 504, EDME 520, and EDME 695.</p>	All Faculty in the EDME program	Fall 2012 Spring 2013 Fall 2013 Spring 2014
2	Continue to explicitly make all candidates aware that they learn and develop teaching strategies for Special Ed or students with learning difficulties in the Math Clinic in EDME 520, in the East Meets West Program in EDME 550, and in doing a case study on struggling students in EDME 503 or 504.	Shuhua An	Spring 2013 EDME 504 Summer 2013 EDME 550 & EDME 520
3	Add more technology skills that are practical and accessible by classroom math teachers in EDME 505; reserve more open lab sessions for students working on technology projects and provide more one on one support	Zhonghe Wu	Spring 2013 Spring 2014

The 2nd Annual Math at the Beach

Diving into the Common Core Standards for Mathematical Practice

Schedule of Events for
March 9, 2013
Karl Anatol Center, CSULB

8:30 a.m. – 9:00 a.m.

Registration and Breakfast

9:00 a.m. – 9:40 a.m.

Opening: Dr. Joan Bissell

Director, Teacher Education and Public
School Programs Office of the Chancellor
California State University

Keynote speaker: Dr. Carolyn A. Maher
Professor II of Math Education
Rutgers University

*Videos for Teacher Education Aligned with
Common Core Standards for Mathematical
Practices*

9:40 a.m. – 12:00 a.m.

Small group sessions by grade level:
AS240: Elementary Grades K – 5
AS241: Elementary Grades 6 – 12

Sponsored by CSULB
Graduate Program in Education, Option in Mathematics Education
Teacher Education Department

Math at the Beach
Diving into the Common Core Standards for Mathematical Practice
Elementary Schools – K-5
Location: AS 240

9:40 – 9:55

Surfing Through Surface Area
MP 1-Make Sense of Problems and Persevere in Solving Them

Trina White and Thao Vo
Fifth Grade
Whittier Elementary
Long Beach Unified

9:55 – 10:10

Finding Fractions
MP 2-Reasoning Abstractly and Quantitatively

Kristin Pate
Third Grade
Elementary Substitute Teacher

10:10 – 10:25

Let's Talk Volume
MP 3-Constructing Arguments and Critiques

Lilly Nguyen, Raul Rodriguez, and Anita Gomez
Fifth Grade
Whittier Elementary
Long Beach Unified

10:25 – 10:40

The Three Little Monkeys and the Big Bad Hyena- A Tale of Composing Numbers
MP 4-Model with Mathematics

Rocio Rodriguez
Transitional Kindergarten
Santiago Elementary
Santa Ana Unified

10:40 – 10:50

Question and Answer Session for CCSS MP 1-4

10:50- 11:05

The Tricycle
MP 5- Use Appropriate Tools Strategically

Maria Audetat & Lakybra White
Third Grade
Whittier Elementary
Long Beach Unified

11:05-11:20

Let's Keep it Precise in the Real World
MP 6- Attending to Precision

Clara Palacios & Hayley Spangler
First Grade Third Grade
Volunteer Teacher St. Cornelius

11:20-11:35

Crosswalk with the CA Standards-Geometry
MP 7- Look for and Make Sense of Structure

Denise Keckeisen & Tisa Montoya-Stellino
Fourth, Fifth and Sixth Grade
ABC District

11:35- 11:50

Let's Look at Patterns
MP 8- Look for and Express Regularity in Repeated Reasoning

Diana Velis, Catherine Nguyen, & Erica Lee
Second Grade
Los Cerritos Elementary
Paramount Unified

11:50 – 12:00

Question and Answer Session for CCSS MP 5-8

**Math at the Beach
Diving into the Common Core Standards for Mathematical Practice
Middle and High School
Location: AS 241**

9:40 – 9:55

**Finding the Right Clothing Combination
MP 1-Make Sense of Problems and Persevere
in Solving Them**

Reth Thach Im
7th Grade

9:55 – 10:10

**Discovering a Pattern
MP 2-Reasoning Abstractly and
Quantitatively**

Pam Amici & Pablo Bert
Grades 11-12 College
Long Beach Unified Long Beach City
College

10:10 – 10:25

**Rationalizing Representations &
“All Roads Lead to Rome!”- How to
Implement MP3 Regularly in the Algebra
Classroom
MP 3-Constructing Arguments and Critiques**

Pedro Galindo & Kristen Keebaugh
Grade 8- Algebra 1 & Geometry
Columbia School
El Monte City School District

10:25 – 10:40

**Flying Through Modeling
MP 4-Model with Mathematics**

James Grinde & Jasmine Kim
Grades 8-10 Grades 8-10
Century High School West High School
Santa Ana Unified Torrance Unified

10:40 – 10:50

Question and Answer Session for CCSS MP 1-4

10:50- 11:05

**Cultural Design Tools in Mathematics
MP 5- Use Appropriate Tools Strategically**

Helen Huynh
Grades 9-12
King/Drew HS
LAUSD

11:05-11:20

**Linear Functions
MP 6- Attending to Precision**

Karen Sean
Grade 8
Lindsey Intermediate Studies Magnet
Long Beach Unified

11:20-11:35

**Maximizing Volume: Creating Equations by
Looking for Patterns or Structure
MP 7- Look for and Make Sense of Structure**

Scott Gordon
Grades 10-12
ABC District

11:35- 11:50

**Expressing Regularity in Repeated
Reasoning Using Exponents
MP 8- Look for and Express Regularity
in Repeated Reasoning**

Jessica Truong & Michael Lopez
Middle School

11:50 – 12:00

Question and Answer Session for CCSS MP 5-8

Math at the Beach

Living with the Common Core Standards

**Schedule for
Saturday, May 5th, 2012
Karl Anatol Center**

8:30 a.m. – 9:00 a.m.

Registration and Breakfast

9:00 a.m. – 9:30 a.m.

Keynote speaker: Dr. Mark Ellis

Examining the Common Core Standards for
Mathematical Practice

9:35 a.m. – 12:00 a.m.

Small group sessions by grade level:

AS241: Elementary Grades K – 2

AS242: Elementary Grades 3 – 5

AS243: Middle School and High School

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Graduate Program in Education, Option in Mathematics Education
Teacher Education Department

Math at the Beach
Living With the Common Core Standards
Elementary Schools – K-2
Location: AS 241

9:40 – 10:30

Measuring Length

Elsie Rivera
Second grade
Melbourne Elementary
ABC Unified School District

How Much Longer?

Francisco Gil
Second Grade
107th Street Elementary School
LA Unified School District

Estimating Length

Sheena Scott
Second Grade
Wisdom Academy
LACOE

10:30 – 11:00

Ladybug Addition

Rocio Rodriguez
Kindergarten
Santiago Elementary School
Santa Ana Unified School District

Melodic Addition

Clara Palacios
Kindergarten

11:00 – 11:15

Promoting Equality

Jill Parago
First Grade
Celerity Nascent Charter School

11:15 – 11:45

Counting Fun

Ji Lim
Kindergarten
Burbank Elementary
ABC Unified

Nicole Tran
Elementary Substitute
Garden Grove Unified

Math at the Beach
Living With the Common Core Standards
Elementary Schools – K-2
Location: AS 242

9:40 – 10:15

Multiplication: Reasoning Abstractly and Quantitatively

Christine Nguyen
Third Grade
Weaver Elementary
Los Alamitos Unified School District

Elizabeth Tannery
Third Grade
Truman Benedict Elementary
Capistrano Unified

10:15 – 10:45

Get Real: Spice Up Your Lessons with Real World Math

Hayley Spangler
Third Grade
St. Cornelius Catholic School, Long Beach
Archdiocese of Los Angeles District

Division and the Unknown Factor

Kristin Pate
Third Grade
Elementary Substitute Teacher
Garden Grove Unified School District

10:45 – 11:00

Digital Geometry Scavenger Hunt

Jennifer Netter
Fourth Grade
East Marshall & Pegasus

11:00 – 11:15

Pick Your Poison! Multi-digit Multiplication Algorithm

Elaine Villaverde
Fifth Grade
Lincoln Elementary School
Santa Ana Unified School District

Math at the Beach
Living With the Common Core Standards
Middle and High School
Location: AS-243

9:35 – 10:00

Fractions in the Real World Exploration

Daniel Gonzalez
6th grade
East Whittier Middle School
East Whittier City

The Discovery of Pi

Kendra Passarelli
6th grade
Marco Forster Middle School
Capistrano Unified School District

Adding Integers

Mahmut Gundogdu
6 – 8, Middle School

10:00 – 10:20

Number Theory using Cakes, Ladders & Trees

Diana Asenas
6th Grade
Hill Cassical Middle School
Long Beach Unified School District

Toby Carpenter
6th Grade
Dean L. Shively
Valle Lindo School District

10:20 – 10:40

Proportional Relationships by Equations

Belva D Serrano
7th & 8th grade
South Gate MiddleSchool
LAUSD - District 06

Lynda McCoy
7th Grade
John Adams Middle School
LAUSD – District 5

10:40 – 11:00

Equations and Inequalities

Diana Richardson
7th Grade
Muscatel Middle School
Rosemead School District

Eric Frommholz
6th/7th Grade Pre-Algebra
Marco Forster Middle School
Capistrano Unified School District

Erika Dreyfus
7th Grade
Hughes Middle School
Long Beach Unified School District

11:00 – 11:10

Solving systems by Elimination

Karin Sean
[Lindsey Academy \(6-8\)](#)
Long Beach Unified School District

Pedro Galindo
[Columbia School](#)
El Monte City School District

11:10 – 11:45

Introduction to Functions

Carolyn M. Anderson
9-12
Santa Ana High School
Santa Ana Unified

Comparing Functions

Angelica Ramirez
9th Grade
Santa Ana High School
Santa Ana Unified

Slope

Indira Valle
9-12, High School
Montebello High School
Montebello Unified School District

South Gate High School
LAUSD

Modeling Functions

David Schilpp
9-12

11:45 – 12:00

Factoring Activity - Home Improvement

Scott Gordon

9 – 12, High School

Gahr High School, ABC Unified

Factoring With Style

Jessica Kim Truong

9 – 12, High School

Fountain Valley School District