

**An Evaluation of Project RENEW:  
*Leadership for Excellence and Renewal in Mathematics Education***

**Year IV Report  
Prepared for the National Science Foundation**

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**PROJECT RENEW: *Leadership for Excellence and Renewal in  
Mathematics Education***

**ANNUAL REPORT YEAR FOUR**  
*JUNE 2003 – MAY 2004*

**Project RENEW Description**

Project RENEW is a five-year project housed in the Center for Educational Change in Mathematics and Science (CECIMS) in the Gevirtz Graduate School of Education at the University of California, Santa Barbara. RENEW is a teacher retention and renewal project designed in response to the question: *How can a model be developed that both supports and retains competent beginning teachers in the profession and develops the leadership capacity of experienced teachers, while at the same time increases both groups' ability to teach mathematics?*

The contribution of RENEW is the development and testing of a model to keep talented teachers in the teaching profession while at the same time helping them improve their understandings of mathematics and its teaching. Unlike other teacher support programs which focus on newly credentialed teachers, RENEW focuses attention on teachers in their first to fifth year of teaching and does not limit such support to only those teachers who are credentialed. Few structures are currently in place to help teachers after they are over the hurdle of their first two years in the classroom when they are more capable of focusing away from issues of classroom management and onto issues of mathematics pedagogy and content. During Years 1-IV RENEW has impacted 382 beginning teachers.

In addition to the high attrition rate of new teachers, many veteran teachers report that they and their colleagues are experiencing "burn-out" from the increased pressure from high-stakes tests, attacks on public education and educators, inadequate physical and curricular resources, and a lack of respect for the profession. RENEW has developed and supported the leadership development of 72 experienced and well-regarded "Preceptors" who work directly with beginning teachers – called "Preceptees" - in their schools and classrooms.

### **Project Objectives and Outcomes**

RENEW is providing professional development workshops, seminars and year round support to teachers in order to:

- Develop a leadership cadre of experienced teachers who work with and support beginning teachers in their first five years of teaching;
- Increase the mathematical and pedagogical knowledge of beginning and experienced teachers;
- Design activities to help teachers, both new and experienced, to implement the vision of mathematics classrooms as described in the NCTM *Principles and Standards for School Mathematics* (NCTM, 2000) and make appropriate connections to the California Mathematics Content Standards; and
- Increase teachers' capacity to work with a diverse student population (especially English Language Learners).

### **Participants**

This current year RENEW is working with 197 people in four main capacities as outlined below.

- 6 Leadership Team Members
- 33 Preceptors (Experienced Mentor Teachers)

- 156 Preceptees (Beginning Teachers)
- 2 Evaluators

The Leadership Team is comprised of the principal investigator, Julian Weissglass, Ph.D, the co-principal investigator and project director, Nancy Terman, and a four-member leadership team for the Cohort II Preceptors. The project evaluators are Sarah Hough, Ph.D. and Nicolasa I. Sandoval, M.A.. The names, role, and work site of the leadership team members who are currently working with the project P.I and Director are listed below.

<b>Name</b>	<b>Role at Work Site</b>	<b>School or Institution</b>
<b>Cohort I Leadership (Project Years 1 – 3)</b>		
<i>Ruby Durias</i>	<i>Mathematics Curriculum Coordinator</i>	<i>Oxnard Elementary SD</i>
<i>Michael Hunt</i>	<i>Junior High Mathematics Teacher</i>	<i>Frank School, Oxnard Elementary SD</i>
<i>Maria Gutierrez-Guzman</i>	<i>Mathematics Project Director</i>	<i>Tri-County Math Project in CECIMS at UCSB</i>
<i>Lynette Meyer</i>	<i>Principal</i>	<i>Brandon Elementary School, Goleta SD</i>
<b>Cohort II Leadership (Project Years 3 - 5)</b>		
<i>Larry Kelman</i>	<i>2<sup>nd</sup> Grade Teacher</i>	<i>Rio Real Elementary, Rio School District</i>
<i>Marilynne Parker</i>	<i>1<sup>st</sup> Grade Teacher</i>	<i>Thurgood Marshall Elementary School, Oxnard Elementary</i>
<i>Terrie Romines</i>	<i>High School Mathematics Teacher</i>	<i>Channel Islands High School, Oxnard Union High SD</i>

<i>Lilia Zambrano</i>	<i>Community College Mathematics Instructor</i>	<i>Oxnard College, Ventura County Community College District</i>
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The Preceptor Cadre (Cohort II) is comprised of 33 experienced mentor teachers or *Preceptors* from nine school districts: Goleta Union School District, Oxnard Elementary School District, Oxnard Union High School District, Rio Elementary School District, Fillmore Unified School District, Ocean View School District, Santa Paula Elementary School District, Simi Valley Unified School District and Westside Union School District. The Preceptors work with 156 beginning teachers (Preceptees) from the nine school districts, who are in their first five years of teaching.

**Introduction to Year IV (June 2004 – May 2005)**

This year, the design of Project RENEW involved the Cohort II Preceptors taking over full leadership responsibilities from Cohort I for mentoring the Preceptees in their schools and districts.

Experienced teachers who serve as Preceptors agree to participate in a three-year leadership program as they work in their districts to support teachers new to the field. Year three was the last year of full participation in Project RENEW for the teachers who served as Cohort I preceptors. Year IV marks the second year of participation for the newer cadre of experienced teachers who are the Cohort II preceptors. An analysis of participant data has revealed that the ethnic diversity of participants has increased. Half of the Cohort II Preceptor cadre identify as people of color, which is an increase

from one-third of the Cohort II Preceptors identifying as people of color. The five-year leadership development design is illustrated below.

*Project RENEW Five-Year Design for Leadership Development in  
Mathematics Education for Preceptors*

<b>Cohort I</b> Year 1: 2001 – 2002	
<b>Cohort I</b> Year 2: 2002-2003	
<b>Cohort I</b> Year 3: 2003-2004	<b>Cohort II</b> Year 3: 2003 – 2004
<i>Cohort I</i> <i>One Reunion Day for all Preceptors</i>	<b>Cohort II</b> Year 4: 2004 – 2005
<i>Cohort I</i> <i>One Reunion Day for all Preceptors</i>	<b>Cohort II</b> Year 5: 2005 – 2006

***Leadership Development Work with Preceptors.***

*Leadership Team for Cohort II.* Four teacher leaders work with the RENEW P.I. and Director as they plan and conduct the Cohort II leadership development activities. This represents another level of leadership development for these four teachers, three of whom are Cohort I Preceptors. The fourth teacher leader is a leader in another project in CECIMS, the *Tri-County Mathematics Project*, which is the USCB site of the California Mathematics Project.

While our numbers of experienced and beginning teachers have continued to grow, we have had many conversations with preceptors, school,

and district administrators regarding next year and beyond. Districts have come to rely on the leadership of these teachers. The teachers themselves value their experience in RENEW and wonder how they might continue to take leadership and continue to get support for their own professional growth. A discussion of this issue is in *Looking Ahead to Year Five*, the last section of the Project Findings portion of this report.

## **Project RENEW Report: Activities**

### **SECTION A: Overview of Activities**

For the purposes of illustration, descriptions of the Year IV RENEW activities are divided into three major areas: Activities of the Leadership Teams for Cohort II, Activities of the Cohort II Preceptors (experienced teachers), and Activities of the Preceptees (beginning teachers).

#### *Year IV Activities of the Leadership Team for Cohort II:*

- Meet as a team to assess progress of the project and craft long-term plans (11.25 hours)
- Plan and Conduct the 2004 Three-Day Leadership Retreat
- Plan and Conduct the 2005 Five-Day Summer Institute for Cohort II Preceptors
- Plan and Conduct 6 Full-Day Preceptor Seminars
- Plan and Conduct 1 Half-Day Administrator Seminar
- Plan and Conduct a Full-Day Seminar for RENEW Preceptees

#### *Year IV Activities of the Preceptors for Cohort II:*

- Plan and Conduct Beginning Teacher Institutes
- Plan and Conduct Mathematics Education Professional Seminars (MEPS) for Beginning Teachers (Preceptees)
- Participate in the 2004 Three-Day Leadership Retreat
- Participate in 6 Full-Day Preceptor Seminars
- Participate in Half-Day Administrator Seminar
- Conduct classroom observations of Preceptees
- Meet informally and formally to mentor Preceptees

#### *Year IV Activities of the Preceptors for Cohort I:*

- Participate in 2 Full Day Reunion Seminars

#### *Year IV Activities of Preceptees:*

- Participate in Mathematics Education Professional Seminars (MEPS) (21.5 hours during the year)
- Participate in Beginning Teacher Institutes
- Participate in Preceptee Day Seminar

- Classroom visitations by Preceptor, or Preceptee visits classrooms of experienced teachers or Preceptors

## **Section B: Description of Project Activities**

### ***The Professional Development of the Preceptor Cadre***

*Plan and Conduct Beginning Teacher Institutes.* During the summer of 2004, Preceptors in five (All nine districts did this with Goleta being part of the UCSB one) districts planned 3-Day and 5-Day Beginning Teacher Institutes and invited any of the teachers in their districts with less than 5 years of teaching experience to participate. Preceptors designed opportunities for beginning teachers (Preceptees) to explore mathematics curriculum, meet with other teachers in the same grade level, discuss the California Mathematics Standards, and address the challenges they face as new teachers.

*Plan and Conduct Mathematics Education Professional Seminars (MEPS) for Beginning Teachers (Preceptees).* Each district team of Preceptors is responsible for delivering 21.5 hours of professional development to the Preceptees (beginning teachers) in the project during each school year. The Preceptors provide professional development by conducting Mathematics Education Professional Seminars, which may take the form of one- to four-hour after school sessions, full or half-day Saturday sessions, or combinations of these formats. The MEPS are typically led by a district team of Preceptors, or by individual Preceptors. Two of the nine

districts work together to jointly plan and conduct MEPS professional development to their Preceptees.

*Three-Day Residential Retreat.* This year started with a three-day residential retreat designed to continue to develop the leadership skills of the Cohort II Preceptors as they began the intensive work of planning for Beginning Teacher Summer Institutes for prospective Preceptees in Summer 2004. Preceptors engaged in investigative mathematics activities, discussed equity issues and the role of leaders, and learned about designing and planning for institutes. The residential retreat occurred June 3 – 5, 2004. All three days of this retreat were attended by both evaluators. A sample description of activities report is included in the Activities Appendix, page ix.

*Preceptor Seminars.* Six full-day seminars were held during the academic year for Cohort II. Along with developing their mathematics knowledge and mathematics pedagogy, district teams had opportunities to share about their work with Preceptees. They addressed what is working well for them, and discussed challenges that they face in supporting the beginning teachers. Table 2 lists the dates of the Preceptor Seminars, the attendance and the number of hours for each session.

*Participate in Half-Day Administrator Seminar.* The purposes of the half-day administrator session are four-fold: to inform the administrators about Project RENEW, to build support for the project, to develop a sense of what mathematically meaningful investigations are like for learners, and to convey the importance of high quality mathematics professional development in their

district. Preceptors reported that time with their school and district administrators was valuable in stimulating discussion about mathematics education within their particular contexts.

*Conduct classroom observations of Preceptees.* The visit is set up by the Preceptor to ensure that the beginning teacher observes the best classroom practices and to conduct post-observation discussions. Preceptors tend to visit the Preceptees later in the school year after informal meetings and professional development seminars have created a trusting relationship between the beginning and experienced teachers. Tables 5 through 9 summarize the classroom visitations for Year 4. Table 10 compares the number of visitations in the first, second, third, and fourth years of the project.

*Meet informally and formally to mentor Preceptees.* Throughout the year, Preceptees and Preceptors meet to discuss the issues that are particular to beginning teachers. These meetings may occur after school, during breaks, or at appointed times. Discussion topics ranging from curriculum questions, use of manipulatives, where to find resources, guidance for navigating through the school and district norms and regulations, and suggestions for classroom management have been reported by the Preceptors.

### ***The Professional Development of Administrators***

*Administrator Session.* The administrator session is concurrent with a full-day Preceptor Seminar (December 9, 2004). At the session, Dr. Jo Boaler, Professor of Mathematics Education at Stanford University, presented

findings from a longitudinal study regarding equitable teaching practices in California high school mathematics classrooms. She also led administrators and preceptors in a mathematics activity, which incorporated different ways of finding the perimeter of a shape. Administrators and preceptors then discussed implications for educators in district teams. Twenty-one administrators and 48 (Cohort I & II) Preceptors from nine districts representing 17 schools attended the session. Feedback from this institute indicated that the time spent working in district groups was highly beneficial to both Preceptors and their administrators.

### ***The Professional Development of Preceptees (Beginning Teachers)***

*Mathematics Education Professional Seminars (MEPS)*. The after school MEPS usually consist of a whole group sharing time about how things are going in their classrooms, a mathematics activity with reflection, and a discussion of what is needed for continued support in the Preceptee's classroom. The longer, full-day MEPS give an opportunity to include more intensive activities, such as mathematics learning in more depth, lengthy discussion of issues of diversity, equity and English Language Learners, as well as time to conduct readings and analyses of current articles on mathematics education. Table 4 lists the dates of MEPS that have been completed in each district, the number of Preceptors who led the MEPS, the number of Preceptees who attended the MEPS, and the number of hours for each seminar. During the year a project evaluator and/or the project director

visit at least one MEPS in every district. A sample MEPS report is included in the Activities Appendix, page xvii.

*Beginning Teacher Institutes.* In the institutes, beginning teachers engaged in investigative mathematics activities consistent with the mathematics envisioned in NCTM's *Principles and Standards of School Mathematics*. The participants also explored the mathematics curriculum at their grade level, met in grade level groups, discussed the California Mathematics Standards, and discussed the challenges they face as new teachers. Table 3 lists the number of Beginning Teachers who attended Institutes in the summer. An evaluator sample write-up of one of these institutes is included in the Activities Appendix, page ix.

*Preceptee Seminar Day.* A Preceptee Seminar Day, focusing on the needs of beginning teachers, was held on February 9, 2005. Eighty-two Preceptees and 32 Preceptors participated, representing nine districts and 39 schools. During this seminar participants had opportunities to discuss what constitutes meaningful mathematics (the focus of the day) and meet and converse with teachers outside of their own district. Ruth Cossey, Associate Professor of Mathematics Education at Mills College was the guest speaker for this event. She led participants through a mathematics activity which was placed in the context of current research.

*Classroom Visitations.* Three distinct categories of classroom visitations occur in Project RENEW. a) Preceptor is invited to observe a mathematics lesson taught by a Preceptee, b) Preceptor demonstrates a

mathematics lesson in the beginning teacher's classroom, or Preceptee observes the Preceptor's mathematics class, or c) Preceptee visits a classroom of another colleague to observe a mathematics lesson. When the Preceptee is not at the same grade level as the Preceptor, or in the case of high school teachers who are not teaching mathematics classes similar to their Preceptor's, Preceptees may visit classrooms of other experienced teachers.

*Informal and formal meetings with Preceptors.* These meetings continue to fulfill one of the project's primary goals – to provide support for beginning teachers and increase their ability to teach mathematics. Exchanges regarding teaching and classroom management, mathematics curriculum, and resource-finding continue to provide valuable support for newer teachers.

**SECTION C: Detailed Activities Information**

**Table 1. Year 4**  
*Activities of Cohort II Leadership Team in Year 4*  
*from June 1, 2004 through May 31, 2005*

	<b>Leadership Activities Cohort II Year 4</b>	<b>Dates</b>	<b>Number of Team Members</b>	<b>Hours</b>
1.	Leadership Team Planning Meetings	Sep 16, 2004 Oct. 15, 2004 Nov 12, 2004 Jan 7, 2005	6 6 6 5	2.75 3 4 1.5
2.	Plan and Conduct 5-Day Summer Institute	Jul 26, 2004 Jul 27, 2004 Jul 28, 2004 Jul 29, 2004 Jul 30, 2004	6 6 6 6 6	6.5 6.5 6.5 6.5 6.5
3.	Plan and Conduct Preceptor Seminars	Sep 30, 2004 Oct 26, 2004 Dec 9, 2004 Mar 23, 2005 May 24, 2005	6 6 6 6 6	6.5 6.5 6.5 6.5 6.5
4.	Plan and Conduct Preceptee Seminars	Feb 9, 2005	6	6.5
5.	Plan and Conduct Half-Day Administrator Seminar (concurrent with Preceptor Seminar on Dec 9 )	Dec 9, 2004	6	3.5
6.	Work with Preceptors to Plan and Conduct Beginning Teacher Institutes	Various Summer 2004		

Table 2. Year 4 Activities of Preceptors (Experienced Teachers) from June 1, 2004 through May 31, 2005

	Preceptor Activities	Dates	Number of Preceptors	Hours
1.	Plan and Conduct Mathematics Education Professional Seminars (MEPS)	See Table 4		
2.	Participate in Three-Day Residential Leadership Retreat	Jun 3, 2004 Jun 4, 2004 Jun 5, 2004	30 30 30	9 9 7.5
3.	Participate in Full-Day Preceptor Seminars			
	Cohort II	Jun 3, 2004	30	6.5
		Sep 30, 2004	31	6.5
		Oct 26, 2004	28	6.5
		Dec 9, 2004	48	6.5
		Feb 9, 2005	32	6.5
		Mar 23, 2005	TBD	6.5
		May 24, 2005	TBD	6.5
4.	Plan and Conduct Beginning Teacher Institutes			
	Santa Paula S.D./Fillmore S.D.	June 21-23, 2004	5	21
	Goleta/UCSB	July 26-30, 2005	5	32.5
	Rio S.D.	Aug 3-5, 2004	6	19.5
	Oxnard Elementary S.D.	Aug 3-4, Sep 2004	3	16
	Oxnard Union High School D.	Aug 23-24, Sep 04	4	12
	Ocean View S.D.	Aug 17-19, 2004	6	18
	Simi Valley Unified S.D.	Aug 30-31, Sep 04	5	16.5
	Westside Union S.D.	Aug 9-11, 2004	3	18
5.	Classroom Observations	Various dates		~1.5
6.	Informal and Formal Mentoring with Preceptees	Various dates throughout the year	All	Various

Table 3. Year 4 Activities of Preceptees (Beginning Teachers)  
*from June 1, 2004 through May 31, 2005*

	Preceptee Activities	Dates	Number of Preceptees	Hours
1.	Participate in Mathematics Education Professional Seminars (MEPS)	See Table 4		
2.	Participate in Beginning Teacher Institutes		(Number of Beginning Teachers)	
	By District			
	Santa Paula S.D./Fillmore S.D.	June 21-23, 2004	14	21
	Rio S.D.	Aug 3-5, 2004	23	19.5
	Oxnard Elementary S.D.	Aug 3-4, Sep 2004	16	16
	Oxnard Union High School D.	Aug 23-24, Sep 04	5	12
	Ocean View S.D.	Aug 17-19, 2004	23	18
	Simi Valley Unified S.D.	Aug 30-31, Sep 04	6	16.5
	Westside Union S.D.	Aug 9-11, 2004	17	18
3.	Classroom Visitations	On-going	See Table 5	Varied

**Table 4. Year 4**

*Combined Activities for Preceptors and Preceptees in Mathematics Education Professional Seminars (MEPS): from June 1, 2004 through May 31, 2005*

	Preceptee Activities	Dates	Number of Preceptors	Number of Preceptees	Hours
1	Mathematics Education Professional Seminars (MEPS)				
	Goleta	Nov 4, 2004	4	14	2
		Dec 2, 2004	4	15	3.5
		Jan 27, 2005	3	15	6.5
		Mar 3, 2005	TBD	TBD	2
		April 27, 2005	TBD	TBD	3.5
		May 26, 2005	TBD	TBD	2.5
	Oxnard Elementary	Oct 23, 2004	5	4	5
		Dec 6, 2004	1	12	3
		Jan 19, 2005	1	1	2
		Jan 28, 2005	1	1	2
		Feb 2, 2005	1	1	2
		Mar 11, 2005	TBD	TBD	5
	Ocean View	Oct 15, 2004	5	4	3
		Dec 2, 2004	5	9	3
		Jan 20, 2005	TBD	TBD	2
		Jan 28, 2005	TBD	TBD	6
		Feb 24, 2005	TBD	TBD	2
		Mar 24, 2005	TBD	TBD	2
		April 28, 2005	TBD	TBD	2
		June 2, 2005	TBD	TBD	2
	Rio	Oct 8, 2004	3	17	1.5
		Nov 6, 2004	3	10	6
		Dec 3, 2004	4	10	2
		Jan 21, 2005	4	10	2
		Mar 12, 2005	TBD	TBD	6
		April 29, 2005	TBD	TBD	2
		May 13, 2005	TBD	TBD	2

Table 4 continued				
Preceptee Activities	Dates	Number of Preceptors	Number of Preceptees	Hours
Oxnard High School District	Oct 7, 2004	2	16	6
	Nov 12, 2004	2	15	1.5
	Dec 13, 2004	3	6	2
	Jan 13, 2004	3	8	2
Santa Paula/ Fillmore (Two districts)	Oct 7, 2004	6	11	2
	Nov 4, 2004	6	20	5
	Feb 3, 2005	TBD	TBD	5.5
	April 28, 2005	TBD	TBD	5.5
Simi Valley	Oct 26, 2004	5	12	3
	Nov 30, 2004	5	7	3
	Jan 25, 2005	5	8	3
	Feb 22, 2005	TBD	TBD	3
	Mar 22, 2005	TBD	TBD	3
	April 26, 2005	TBD	TBD	3
	May 31, 2005	TBD	TBD	3
Westside Union	Sep 14, 2004	3	11	1.5
	Oct 12, 2004	3	12	6.5
	Nov 9, 2004	3	12	2.5
	Jan 25, 2005	2	10	1.5
	Feb 15, 2005	TBD	TBD	1.5
	Mar 15, 2005	TBD	TBD	6.5
	April 26, 2005	TBD	TBD	1.5
	May 17, 2005	TBD	TBD	1.5
	June	TBD	TBD	

Tables 5 - 9. Year 4  
 Classroom Visitation Activity by Preceptors and Preceptees in Year 4 of  
 Project RENEW from June 1, 2005 to May 31, 2005

Three Categories of Classroom Visitations in Project RENEW

- a) Preceptor (experienced teacher) visitation of Preceptee's Classroom
- b) Preceptee (beginning teacher) observation of Preceptor's Classroom
- c) Preceptee observes other experienced teacher classrooms at their grade level

Table 5. *Summary*

Summary of Classroom Visitations in Year 4 (as of February, 2005)	
Total number of Classroom Visitations in category a, b, or c	69
Proportion of Preceptors involved in visitations	31% (11 of 36)
Proportion of Preceptees involved in visitations	25% (33 of 134)
Proportion of Preceptees involved in three observations	5% (7 of 134)

Table 6. *Preceptor Visits*

a) Preceptor Visiting Preceptee Classrooms (as of February, 2005)	
Number of Preceptor observations of Preceptee Classroom	12
Percent of Preceptors observing classrooms as of February, 2004 in Year 3	14% (5 of 36)
Proportion of Preceptees visited by Preceptor	8% (11 of 134)

Table 7. *Preceptee Observations of Preceptor's Classrooms*

b) Preceptee observation of Preceptor mathematics class (as of February, 2005)	
Number of Preceptee observations of Preceptor Classrooms	11
Proportion of Preceptees observing Preceptor classrooms	8% (11 of 134)

Table 8. *Preceptee Classroom Observations*

c) Preceptee observation of other experienced teacher classrooms (as of February, 2005)	
Number of Preceptee observations of mathematics classrooms other than Preceptor classrooms	46
Proportion of Preceptees observing classrooms of experienced teachers	13% (18 of 134)

Table 9. *Number of Classroom Visitations made in each year the Project*

Classroom Visitations		
	Number of Preceptors	Number of Classroom Visitations (a, b, or c)
Year 1 2001 – 2002	30	minimal
Year 2 2002 - 2003	29	81
Year 3 2003 – 2004	56	255
Year 4 2004 – 2005 (as of Feb. 2005)	34	69

## **SECTION D: Final Summary of Year III Activities**

Since the report for Year III was submitted in February 2004, what follows is summary information for the Year III activities of RENEW. In the 2003-2004 academic year Project RENEW worked with nine school districts in Southern California located in Ventura, Santa Barbara, and Los Angeles counties. A six-member leadership team, 155 beginning teachers (Preceptees), and 56 Experienced Teachers (Preceptors) participated in the project.

### **Professional Development Hours Completed**

*Preceptors.* Between July 2003 and June 2004 nine days of professional development for the Cohort I and 16 days of professional development were offered for the Cohort II Preceptors. Activities for Cohort II included a ten-day summer institute that began their participation in RENEW and 6 full-day academic year Preceptor Seminars. All of the 26 Cohort I and the 29 Cohort II Preceptors that completed their participation in Year III of RENEW attended these professional development hours. One Cohort I Preceptor was unable to complete her participation in Year II due to health issues.

*Preceptees.* Table 10 below depicts the professional development seminars (MEPS) that were offered in each district in Year III, and Table 11 shows the number of professional development hours Preceptees completed.

Table 10. Year III  
 Combined Activities for Preceptors and Preceptees in Mathematics Education  
 Professional Seminars (MEPS) from June 1, 2003 through May 31, 2004

	Preceptee Activities Updated For Year Three	Dates	Number of Preceptors	Number of Preceptees	Hours
1	Mathematics Education Professional Seminars (MEPS)				
	Goleta	Oct 9, 2003	7	16	2
		Nov 4, 2003	5	17	3.5
		Jan 15, 2004	6	13	2
		Feb 19, 2004	6	13	2
		Mar 24, 2004	7	12	6.5
		Apr 22, 2004	6	12	3.5
		May 20, 2004	7	11	2
	District Total				21.5
	Oxnard Elementary	Sep 25, 2003	9	20	6
		Oct 22, 2003	2	2	2
		Oct 23, 2003	2	6	2
		Nov 3, 2003	2	4	2.5
		Nov 17, 2003	2	2	2
		Dec 4, 2003	2	1	2
		Jan 22, 2004	2	3	2
		Mar 2, 2004	2	5	1.5
		Mar 8, 2004	3	4	3
		Mar 9, 2004	2	5	1.5
		Mar 16, 2004	2	5	1.5
		Mar 23, 2004	2	5	1.5
		Mar 24, 2004	8	16	1.5
		Mar 31, 2004	2	5	1.5
		Apr 8, 2004	2	2	2
		May 20, 2004	2	2	2
		May 24, 2004	1	3	3
	District Total				34.5
	Ocean View	Oct 10, 2003	6	7	3
		Oct 24, 2003	5	7	6
		Jan 23, 2004	5	6	6
		Feb 26, 2004	6	5	2
		Mar 18, 2004	6	5	2
		May 13, 2004	6	4	2
	District Total				21

Table 10 continued					
Preceptee Activities Updated For Year Three	Dates	Number of Preceptors	Number of Preceptees	Hours	
	Rio				
	Oct 10, 2003	7	26	2	
	Nov 1, 2003	4	11	6	
	Dec 5, 2003	5	18	2	
	Dec 10, 2003	1	3	2	
	Jan 23, 2004	8	26	2	
	Mar 20, 2004	8	15	6.5	
	Apr 30, 2004	8	13	2	
	May 21, 2004	8	21	2	
	<b>District Total</b>			<b>24.5</b>	
	Oxnard High School District	Sep 25, 2003	4	15	6
		Oct 9, 2003	1	4	2
		Oct 15, 2003	2	5	2
		Oct 16, 2003	1	4	2
		Nov 4, 2003	1	5	2
		Nov 13, 2003	1	4	2
		Nov 20, 2003	1	4	2
		Dec 4, 2003	4	12	2
		Feb 11, 2004	2	4	2
		Feb 19, 2004	1	4	2
		Mar 25, 2004	5	11	7
		Apr 21, 2004	1	4	2
		Apr 29, 2004	1	4	2
		May 20, 2004	5	9	2
	<b>District Total</b>			<b>37</b>	
	Santa Paula/ Fillmore (Two districts)	Sep 25, 2003	5	14	2
		Nov 6, 2003	5	14	6
		Dec 4, 2003	5	13	2
		Jan 22, 2004	5	13	2
		Feb 26, 2004	5	16	6
		Apr 29, 2004	5	16	2
	<b>District Total</b>			<b>20</b>	

TABLE 10 CONTINUED					
	Simi Valley	Sep 23, 2003	8	25	3
		Nov 25, 2003	8	20	3
		Jan 27, 2004	8	20	3
		Feb 24, 2004	8	19	3
		Mar 23, 2004	6	19	3
		Apr 20, 2004	8	17	3
		May 25, 2004	7	15	3
	District Total				21
	Westside Union	Sep 9, 2003	5	15	2
		Sep 30, 2003	5	17	2
		Oct 21, 2003	4	13	2
		Nov 4, 2003	6	14	3
		Jan 13, 2004	6	13	2
		Jan 28, 2004	3	8	6
		Jan 29, 2004	3	10	6
		Feb 24, 2004	5	11	1.5
		Mar 16, 2004	6	12	1.5
		Apr 27, 2004	5	9	1.5
		May 18, 2004	6	14	3
		June 14, 2004	4	7	2.5
	District Total				33

Each of the nine districts participating offered twenty or more hours of MEPS during Year III. Of the 155 participating Preceptees, 39% completed 20 or more hours of professional development. The total number of Preceptees completing selected numbers of MEPS hours are given in table 11 below.

Table 11. Year III  
*Preceptee Professional Development Attendance (as compared to year II)*

	% of Preceptees	Cumulative percent of the Preceptees
20 or more hours	39% (30%)	
Between 15 and 19 hours	28% (15%)	67% (45%)
Between 10 and 14 hours	17% (22%)	84% (67%)
Between 5 and 9 t hours	15% (27%)	99%(94%)
More than 0 but less than 5 hours	1% (6%)	100%

Table 12. Year III  
*Classroom Visits Conducted During Year III*

	None	Between 1 and 3 visits
% of Preceptees who received visit from Preceptor in their classrooms classroom	61%	39%
% of Preceptees who visited their Preceptor's classroom	66%	34%
% of Preceptees who visited another experienced teachers' classroom	10%	90%

Table 13. Year III  
*Preceptees Receiving Select Number of Visits*

% of Preceptees who received 3 or More Visits (type a, b or c)	20%
% of Preceptees who Received 1 or 2 Visits (type a, b or c)	44%
% of Preceptees who Received 0 visits (type a, b or c)	36%

### **Sections E: Year IV Evaluation Activities**

During Year IV the evaluators continued to collect and analyze a wide variety of data to document how the project is being implemented, to examine the progress of the project in moving its participants towards goals and objectives, and to uncover the extent to which the project is supporting and retaining beginning and experienced teachers in the profession.

#### ***Implementation***

Particular to implementation this year were the issues of (1) supporting the Cohort II Preceptors as they took full responsibility for the mentoring of beginning teachers (Preceptees) in their schools and districts; (2) the summer Beginning Teacher Institutes; (3) the exploration of the effects of the project on Preceptees' mathematics pedagogical knowledge; (4) the support of both beginning and experienced teachers as they implement effective mathematics practices in their classroom in the context of the State-wide focus on language arts. Data that informed us of the progress of these issues were collected in the form of questionnaire responses, participant observations during Preceptor Seminars, observations of MEPS (Math Education

Professional Seminars), evaluator-classroom observations and in-depth interviews with of a sample of seasoned RENEW Preceptees.

### ***Progression Toward Project Objectives***

We continue to address the evaluation questions posed at the start of the project (see Appendix I of the Findings section). This year a continued focus has been placed on the extent to which the project is helping participants develop pedagogical content knowledge (PCK) of a kind that allows them to implement effective and equitable mathematics practices (based NCTM's Principals and Standards for School Mathematics, 2000) in their classroom. In particular, we have focused on growth in Preceptee understandings. Data that have informed us of this progress has been varied.

#### *Using concept maps to examine change in Content Knowledge.*

The successful use of concept maps as a means to measure change in Preceptors' content knowledge during the Year II Summer Institute prompted us to use them in a week-long Beginning Teacher Institute that was offered at the start of Year IV to measure change in participants developing understanding of statistics. The institute had a coherent mathematics focus of statistics and its teaching, hence participants, after a short period of instruction about concept maps, drew pre and post concept maps detailing their understandings of statistics. These maps were analyzed using two approaches: a structural analysis following Novak & Gowind (1984) and a content analysis following Morine-Dershimer (1993). In addition, pattern matching techniques were used to demonstrate the construct validity of this

measure. An article reporting these results is in press (Hough & Weissglass, 2005).

*Analyzing change in beliefs and understandings of pedagogy and subject matter.* Each year we ask both Preceptee and preceptor cadres to complete a *Beliefs About Mathematics Pedagogy* and a *Beliefs About Doing Mathematics* scale as part of their questionnaires. Factor analyses were conducted on pre responses to obtain 4 reliable “beliefs constructs”. These constructs were then analyzed for change using multivariate techniques across the three years of the project and were compared between Preceptees and Preceptors.

*Looking at changes in efficacy to implement effective practice in the classroom.* Preceptees were asked each year how well prepared they feel to implement specific aspects of effective mathematics practices in their classrooms. We conducted t-tests to look at changes in these responses across both pre post Year III and as a function of years a participant had spent in the project.

To understand changes in the practices of preceptors we analyzed changes in responses across years to questions from *The Preceptor Questionnaire*, which asked them to describe their ideal classrooms and the extent to which they were able to implement this ideal in their classrooms.

*Development of Leadership Capacity.* In this 3-tier RENEW model of professional development, the change in Preceptee knowledge and practice is dependent on their mentors, the Preceptor Cadre. Thus, we are interested

in monitoring the development of their mentoring abilities in particular and their leadership development in general. This year we continue to analyze longitudinal self-report data from *The Preceptor Questionnaire* in order to understand how preceptors are progressing in this area. The results of this effort will be presented at the Annual Meeting of the American Educational Research Association by the project director. In addition to the open ended questionnaire items, in-depth interviews are being conducted with the Cohort I Preceptors to triangulate these results. An article describing this study is in press (Hough, Terman, et. Al)

### ***Satisfaction and Retention***

We continue to pay attention to the particular needs that RENEW Preceptees have as they enter the project. On the *RENEW Beginning Teacher Questionnaire* that is administered to all Preceptees they are asked to describe what they need as a beginning teacher from this project. Based on constant comparative analyses (Strauss, 1987) of 174 of these responses from pre questionnaires in project Years I and II, 10 needs categories emerged. At the end of each year, as an addition to the *RENEW Beginning Teacher Questionnaire*, each Preceptee is asked the extent to which the project is addressing these needs. We analyzed reflective prompts that asked in more detail what the Preceptees felt they had gained from the project.

More extensive retention data is being gathered this year in order to track Preceptees after they leave the project. In addition, this year the

evaluators are working with districts to track the numbers of beginning teachers in those districts from the start of the project year through 2 years after the end of RENEW. This data will allow us to look at both the impact of RENEW in terms of the percentage of beginning teachers in each district it has supported, as well as compare RENEW retention rates to overall district retention rates.

As a summative measure we will use matched sampling techniques (reference here??) to design a study to look at teacher burn-out. At the end of year IV we plan to administer to all teachers who participated in RENEW for one or more year, and a matched sample, *The Teacher Burn-out Questionnaire* to determine if RENEW participants feel less job stress and burn-out as a result of their participation.

#### **Section F: Other Project Activities**

While the project staff will give several conference presentations during Year IV more attention this year will be spent preparing findings for publication so that our learning about supporting beginning and experienced teachers can be shared throughout the research community.

The evaluators, director and P.I have two articles: (1) Stages of Leadership Development in the Context of a Teacher Retention and Renewal Project; (2) Construct Validity in Using Concept Maps to Measure Beginning Teachers' Knowledge Structures; in submission to The International Journal of Learning. We also have an article: Using Concept Maps to Measure Teachers' Understandings of Algebra, that is

currently in preparations, that will be submitted to the Journal of Mathematics Teacher Education.

*Conference Presentations to Date:*

O'Rode, N; Terman, N. (2005). *Mathematics and Equity: Developing Leadership of Experienced Teachers*. Paper to be presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada. April, 2005.

Terman, N; Guzman, M. (2004). *Mathematics and Equity: Developing the Leadership of Experienced Teachers to Work With Beginning Teachers*. Paper presented at the National Council of Supervisors of Mathematics (NCSM) April 19-21, 2004 Philadelphia, PA

Hough, S; Erbes, S; O'Rode, N. (2004). *Understanding and Addressing Beginning Teacher Needs and Concerns: The Effects of Project RENEW, A Retention and Renewal Project in Mathematics*. Paper presented at the American Educational Research Association, San Diego, CA. April, 2004.

*Hough, S; Erbes, S. (2004). Understanding and Addressing Beginning Teachers' Needs, Concerns and Difficulties: A Description of a Retention and Renewal Project in Mathematics Education. Paper presented at the Association of Teacher Educators 84th Annual Meeting Dallas, TX, February 15 - 19, 2004*

Terman, N; O'Rode, N. (2004). *Project RENEW: Developing The Leadership of Experienced Teachers to Work With Beginning Teachers*. Paper presented at the New Teacher Center Symposium, San Jose, CA. February, 2004.

Terman, N; Guzman, M. (2003). *Learning from Each Other: Experienced and Beginning Teachers Explore Mathematics and Equity*. Paper presented at the California Mathematics Council-Southern Section (CMC-SS). Palm Springs, CA. November 7-8, 2003

Hough, S; O'Rode, N. (2003). *Revisiting the Needs of Beginning Teachers in the Context of a Professional development Project*. Paper Presented at the Facing Futures Conference, February 2003, Santa Barbara, California.

Weissglass, J; Terman, T; Hough, S. (2002). *Project RENEW: Leadership for Excellence and Renewal in Mathematics Education*. An Emergent Model for Supporting Beginning Teachers. Paper presented at the California Council of Teacher Educators

Papers, when available, can be downloaded directly from <http://renew.education.ucsb.edu/research.htm> as they become available  
Or by clicking on the research menu option of RENEW's new website:  
<http://renew.education.ucsb.edu>

## **Appendix I: Evaluator Write-up From Cohort II Retreat: First Day**

### *Opening – Overview of the Four Days and Welcome to the New Preceptors*

After feedback from the first day of last years summer institute was read, two new preceptors were introduced. Harrell Moore and Lisa Frey are middle school mathematics teachers. Harrell teaches in the Fillmore school district and Lisa at Santa Paula. Niki Sandoval, the new evaluator was also introduced at this time. Each new person was asked to share what they bring to education.

### **8:55 a.m. Probability & Statistics Activity**

Julian introduced the first math activity in the context of a problem. He had (he told everyone) tested positive for cocaine use and wanted to negate the claim. He did some research into the validity of the drug tests and said he needed some help in doing the mathematics. The activity that pursued was broken down into several phases to ensure accessibility for all of the participants. This is indicative of all RENEW mathematics activities that are modeled for participants.

A. First Julian asked participants to use the words probability and probable in a sentence and share at their tables. One or two participants from each table then shared back to the whole group.

*There is a good probability that you will get lost on your way here.  
I will probably be much more relaxed after this retreat than I am this morning.  
The probability of picking a diamond from a deck of cards is 1/4*

Julian: There are differences between the Harrel's statement about decks of cards and Colleen's statements about chickens. The two are used in mathematics classrooms and in everyday talk, respectively and there is often confusion between the two, especially for English learners.

What is the difference between the 3 probability statements?

1. The probability of rolling two 6s with a pair of die is  $1/36$ .
2. The probability a child born in the U.S will be a boy is less than one half.
3. There is a high probability that the president will be re-elected.

The whole group share back produced the following consensus that statement (1) is a precise mathematical statement that is derived from the theory of probability. It is the only unambiguous statement. One participant said :”It doesn't leave me with any unanswered questions”. The second

statement is based on observations, on real life census data. It is a calculation. The third statement is based on belief or assumption.

[SH] This was a good introduction to this particular activity and to the 3-day focus on probability for 2 reasons: First because it grounded everyone in the basic ideas and secondly because interesting topics came up as a result of this initial share-back such as independent events. (see video)???

The mathematical theory of probability is concerned primarily with statements similar to 1.

B. Discussion at table. Participants were asked to predict the number of times a 3 would appear, a 6, and even number?

They were then asked to do the experiment and roll dice 30 times. What is the outcome of your rolling the dice?

Answer the same question for 60 rolls, 120 rolls, 480 rolls.

Outcome of Activity

Participants learn that :

the “expected value” is different than what you actually get.  
the more rolls the closer to the expected value.

Our goal in probability is to be able to predict the outcome of a certain experiment or process if that experiment or process is repeated a large number of times.

Definition: Probability of event =  $\frac{\# \text{ of successful outcomes}}{\text{Total \# of outcomes}}$

C. Drug testing example: Mandatory drug testing

*Problem: The school district to which you are applying for a job is considering mandatory drug testing of its teachers. Suppose a drug test for cocaine use is 98% accurate: 98% of the people who have used a drug within the past 24 hours will test positive, and 98% of the people who did not will test negative. Suppose that in addition .5% of the people on the job (1 in every 200) engages in cocaine. If someone in the random testing tests positive, how likely is it that that person has engaged in drug use in the past 24 hours.*

Participants worked in their groups on this problem for approximately x?? minutes. Julian circled the tables while they worked to give feedback and asked clarifying questions to help participants find the right track.

[NS observed group members related to each other well. They were courteous in giving each other time to speak and were utilizing the listening structures modeled by the institute staff. This was most visible during a particularly challenging exercise, regarding drug testing. Each table worked as a team, listening respectfully to the various approaches presented by each member. They worked to help each other grasp the concepts and arrive at a solution. Individuals drew diagrams, discussed possibilities, and took notes on different approaches.]

At a time he considered appropriate Julian asked one group to share their response. Their reasoning was as follows: *Given 5000 teachers, .5% are users, i.e. 25 teachers. Because the drug test is 98% accurate 24.5 of these teachers “guilty” teachers will test positive. Of the remaining 4975 teachers who are non users, 2% will test positive (due to the possibility of a false negative), i.e. 99.5 teachers. Thus 124 teachers (99.5+24.5) will test positive. Hence # users/# test positive = 25/124 = .20, 20%. This means that 80% of those teachers that test positive from a drug test are innocent.*

Nancy Terman suggested drawing an area chart of this reasoning process to help others understand the reasoning behind the strategy shared.

	Users	Non-users
Test positive	24.5	99.5
Test negative	.5	4875.5

[SH comments. The purpose of RENEW mathematics activities are twofold: Some activities are designed to place the adult participant back into the role of an active learner in order for them to re-learn/learn important mathematics content that they are to teach and to give them perspective on how it feels learning mathematics; other activities are designed to give participants opportunities to relate mathematics content they already know to specific pedagogical techniques or to adapt a specific activity to their grade level. This activity was the former type.]

Participant end-of-retreat comments about the mathematics

- *This institute has provided an opportunity for me to learn that I enjoy a challenging math problem and the process one goes through starting with no clue how to approach the problem to finding strategies that lead them towards a solution. (I.e. drug uses/non uses)  
What did I learn about myself???*
- *Mathematical probability- all is not as it appears you may feel an event has an equal chance but guess what, it doesn't*
- *During the mathematics activities I found I could figure out how to set up the problems by talking it out with my group or drawing pictures*
- *I learned a lot about probability on the first activity (cocaine). I liked seeing the area model to represent it. I enjoyed the menu and was reminded how great they are to keep students engaged. I'd like to see if I can do something similar of my kids but tend to get scared away by the prep work. Will give it a try though.*
- *The math activities were all very fun. The biggest "aha" for me was finding out that 7 had the most combinations and is the most likely number to "win" in the roll 2 dice game. (I love to play craps and now I see why the odds are in the casino's favor!!)*
- *This retreat was great. I learned so much about probability. This was awesome because it is an area that I don't feel strong in and an area that I don't focus much on in my classroom. Thank you also for allowing us time to work on our institute.*
- *I learned that probability can be fun. The activities we did were enjoyable and appropriate.*
- *This institute has provided an opportunity for me to learn that I enjoy a challenging math problem and the process one goes through starting with no clue how to approach the problem to finding strategies that lead them towards a solution. (I.e. drug uses/non uses)*
- *Probability can be a meaningful math activity when it is imbedded in, a fun math game. Children need a variety of experiences to build understanding of what probability means.*
- *I loved that math. I was never very good at understanding probability, and the exercises these last three days have stretched me while making me realize that I can do probability problems.*

•One of the key points of the RENEW seminars and this institute is how well balanced they are. We cover math content in a non trivial and very meaningful way.

### **10:35 a.m. Designing Mathematics Professional Development I**

[SH: one of the main purposes of the retreat for Cohort II preceptors is to guide them through the process to offer support to their leadership as they start to design their beginning teacher institutes.]

Nancy Terman and Terrie Romines offered this first segment on designing professional development. They explained the purpose of these activities “to work on ?? self as a cohesive team”. They began by asking participants to think back to the institutes and seminars they had attended over the last year and to dyad with the question, *what components make up an effective institute?* New participants were asked to describe what they would like to obtain from participation. Current and former participants were asked to reflect upon the past year of institutes and seminars and describe what was important.

Feedback was gathered in a large group and documented on easel paper. Participants described the following goals in designing an effective institute:

- Build relationships – meaningful, accepting, trusting
- Lots of materials
- Personal experience panels – people sharing powerful stories and experiences
- Balance – math and experiences (the whole person), not like other institutes
- Grade level groups – sharing expertise
- Modeling structure and consistency
- Thinking is valued and expanded
- Challenging math activities – experiencing role of learner, processing own thought
- Quality of math problems and not quantity
- Opportunities for personal as well as professional growth

Next, in a 2-minute dyad, participants were asked to consider their beliefs about teachers and their professional growth by reflecting on an overhead that Nancy had displayed. The overhead was a “working draft” of the beliefs about teaching (or was it about teachers? that are held by the leadership team. Participants were asked to reflect on *What beliefs do you hold true, which do you disagree with? Which are you able to act on and which are a hope? What would you add?*

A discussion about respect (or lack of it) in work environments followed. The group addressed the following points:

Students as teachers

Respect as equity (equitable treatment for teachers at all levels)

Leaders must be “present”, healthy

Support and engagement from administrators is necessary

Taking time to think is important

Beliefs regarding equity were posted for the whole group. Participants were asked to write what they remembered from the previous time. A reminder of support group guidelines was elicited from the participants:

Confidentiality

Full attention

Do not bring up sharing that happens during support group at a later time

Listen for the benefit of the talker

Equal time for each participant

Groups divided into their support groups. Lunch break followed group meetings.

Directly after lunch the “designing Professional development” theme continued.

Larry Kelman introduced the Designing Mathematics Professional Development II. The purpose was to encompass the larger context and to clarify the rationale for activities. In small groups, participants were asked to list general goals or themes for their upcoming beginning teacher institutes serving teachers in their first five years of teaching. Following small group discussions, the large group re-convened and stated the following goals:

Open question and answer discussion

Building community, networking

Safe environment

Building respectful new culture in mathematics

Understanding equity

Learn mathematics

Developing long term planning

Connect standards to lesson/seeing the bigger picture

Knowledge of resources

Awareness of the value of reflection

Keep teachers in the profession

Safe to voice fears, share

Coherence throughout week

Break down barriers between newer and more experienced teachers

Develop confidence to teach what students need

- Maintain communication with administration
- Learn about their needs
- Develop network
- Model classroom practices for preceptees
- Learn about ins/outs of district

The large group also stated goals and elements to include in the three-day institutes:

- Math for teachers as learners
- Listening structures - support groups, dyads, personal experience panels
- Mixers
- Grade level issues
- Feedback, reflections
- Introduction/reading related to issue
- Equity issues
- Information/research
- Business
- Sorts
- Sign in charts
- Food
- Play

Institute planning tips were also presented:

- In advance,
  - Plan prep day
  - Set up early
  - Confirm attendance, issue reminders
  - Take resources from class
- Working together as a leadership team,
  - Leaders participate
  - Have fun
  - Respect each other's time, keep to the schedule
- Responsibilities,
  - Involve everyone, assign responsibilities
  - Be clear about who is doing what (including last minute needs)
- Coherence,
  - How is it connected to other activities? How does it contribute to the whole institute?
- Purpose,
  - Why are we doing this?

Relevance,  
How is this meaningful to participants?

Balance,  
Is there a balance of the components you want to include?

Revisit goals periodically,  
Is what we are designing consistent with our goals and beliefs?

Remember there is never enough time, so choices must be made.

The planning teams convened to discuss the following:

- The group and its needs
- Goals for institute
- Components to include.
  - Introduction/opening
  - Business
  - Sign in charts/graphs
  - Math content
  - Break/food
  - Structures (personal experience panels, dyads, support groups) related to issues (equity, math teaching)
  - Mixer/fun
  - Grade level issues/groups
  - Feedback
  - Closing

(NS observed one of the planning teams. Logistical issues came up, such as reimbursement for food. Teachers have paid for such costs out of their own pocket before, due to administrative procedures at their schools. Teachers also discussed the fact that language arts are a priority at their school, not mathematics. As the mathematics test scores are not as low as language arts, more resources are allocated to language arts.)

(SH observed one of the planning teams. The topic of UPS (under performing schools) came up since one of the schools in this district was such a school. There it is virtually impossible to deviate from the curriculum. The importance of determining the specific needs of the teachers in this district was addressed. They decided to follow the lead of the retreat and make Probability and Statistics their theme. Rather than have a PEP so early on in the experience this team decided to have a panel of experienced teachers from the district talk about relevant issues of equity as it relates to this district. They decided to do a mathematics activity similar to one they had seen at

their 2-week institute) conducted in Spanish to illustrate second language learner issues.

[SH comment: During this first day at the institute, each of the leadership team had the opportunity to lead an activity, “TCMP” style won’t have meaning to NSF reader. That is, they worked in pairs to develop and facilitate the activity. ]

## **Appendix II: Sample Beginning Teacher Institute Write-up**

**Leadership:** Nancy Terman, Julian Weissglass, Maria Garcia Cacique, Colleen Million, Cristina Rodriguez.

**Participants:** 22 beginning teachers participated (7 from Goleta, 9 from Oxnard, 4 from Santa Paula, 1 from Simi valley and 1 from Rio). They were from K-8 grade levels.

**Evaluator Write-up:** *Sarah Hough and Niki Sandoval*

**Monday:**

### ***Mathematics Learning***

#### ***Concept Maps as an Evaluation Tool***

The set was stage for the mathematics activities of the week by Julian. He talked about participants being at different levels of understandings of statistics and how we wanted to capture those knowledge representations to improve the math activities here at the institute and to see if those activities had an impact on what participants know about statistics. Concept maps were introduced and some of their uses were presented including their use in this context: *to reflect on what you know about a particular subject and to use this tool to represent (serve as a symbol or portrayal of) your mathematical knowledge.* Other uses include: Organizing, recording, and representing ideas; Brainstorming; Designing/planning (for example, an essay, book, website, lesson plan); Communicating ideas; Assessing one's understanding; and Helping people learn

26 participants completed a concept map. Preliminary analysis of pre maps shows a wide range of knowledge/understanding of statistics in participants.

#### **Introductory mathematics activity**

Julian followed the concept map activity with an introduction to statistics: Some people divide statistics into 3 parts: collecting data, describing and presenting data; drawing conclusions from data. The activity that followed focused on the second.

A group activity taken from Julian's own text "Exploring Elementary Mathematics" was used. This activity was designed for groups of students to explore/review some basic measures of central tendency (mean, median, mode, range and variance) in Statistics at their own pace by looking at some data which illustrate the advantages to using each measure. Julian introduce this activity in the context of a story about his own teaching of the course Math for Elementary School teachers, that illustrated the pros and cons of implementing small group instruction as opposed to lecture methods of teaching.

Julian was explicit about the need for processing and at this point he set some norms for small group work including the notion of giving up pre-conceived notions for what a teacher is in terms of transmitting the same content to every student. On the contrary, in small group work the learning is often at the groups own pace.

Processing and reflection

Dyad: What did you learn?

Each group come up with a sentence and share-back to whole group.

### ***Mathematics in Grade Level Groups***

Colleen - K-1<sup>st</sup> grade

Cristina - 2<sup>nd</sup> grade

Maria – 3-5<sup>th</sup> grade

Nancy – 6-8<sup>th</sup> grade

The purpose of focusing on grade level groups is to explore the type of mathematics content learning that occurs during one of these groups as participants meet over a sustained period of time, and contrast this learning to that which occurs during the RENEW mathematics activities that are designed with subject matter learning goals in mind. According to the project RENEW Director, the main purpose of the grade level groups is to focus on an activity that asks participants to apply what they are learning at their specific grade level. The learning that occurs in these groups tend to be more pedagogical in nature than subject matter driven. These grade level groups were planned out coherently to fit in with the activities of the institute. In general, participants in these groups are given opportunities to take what they are learning and plan grade level specific activities appropriate for use in their own classrooms.

I Sarah chose to do participant observation in Maria's 3-5<sup>th</sup> grade level group for the four sessions that took place. On day one the following beginning teachers attended:

Abbey has taught 1/2, 3/4, 3<sup>rd</sup>, 5/6 and 5<sup>th</sup> grades. She is currently teaching 5<sup>th</sup> grade.

Suzina has taught 4<sup>th</sup> grade.

Jennifer had taught K and 3<sup>rd</sup> grade.

Jerri, a resource teacher teaches at the 4,5 and 6<sup>th</sup> grade levels.

Lisa, Areceli and Jennifer both teach 3<sup>rd</sup> grade

Kristina teachers 5<sup>th</sup> grade.

Maria introduced herself to the group and explained that for the past year she had been out of the classroom and working for Migrant Education. She agreed to facilitate this grade level group but has not experience teaching beyond 3<sup>rd</sup> grade. Maria emphasized that her role was to facilitate the group rather than give answers. The activities participants engaged in this first 45-minute session were “community builders”. Using unifix cubes, participants were asked to take cubes and build something that represented the number of members in their family. Each person was then asked to share something about their representation and how it related to the aggregate group “data”.

Example responses: “Mine is not the longest or the shortest”, mine is like the majority because it is standing up (one unifix cube was lying on the table on its side).

These numbers of family members were to be reported on a communal graph on the wall during the next part of the activity which was a jigsaw of the NCTM Probability and Statistics Standards for grades 3-5. Each participant read a small section of this document and then shared back to the group. From the share back it seems that students at the 3-5<sup>th</sup> grade level should be given plenty of opportunities to participate in statistics activities, to be given problems related their everyday experiences and that they were developmentally ready to start to generalize findings at this age and to be able to make statements about aggregate data rather than focus only on their own data attributes like younger students. In terms of problem solving, NCTM believes that students at all grade levels should be given multiple opportunities to problem solve.

Maria directed the discussion toward the activity we had just completed in relationship to its extension to include things we had just read about. Participants had good ideas such as connecting to social studies by doing “Family Histories” through looking at ages of people in students families; by comparing and contrasting aggregate data of the students’ class to another class (“Big buddy class” for eg.); focusing on a simple question (such as the one we did) and placing the focus on student learning of different methods of graphing for the same data.

60% of participants mentioned and commented positively on grade level groups in their day 1 feedback

*I especially enjoyed the “classroom connection” time. I’m looking forward to getting more ideas during the week.*

*My class connection was beneficial.*

*I enjoy the hands-on activities where we can brainstorm and adapt ideas for our own grades. Thanks for the resources, handouts and book.*

*Favorite part of the day: grade level meeting. Very beneficial, look forward to tomorrow*

*Thanks for giving us time to meet at grade levels... collaborations are key.*

*Small group and grade level groups are wonderful. The conversations are amazing.*

*I love the time you give to collaborate with each other!*

*Helpful point was grade level meeting – start a year long plan for teaching math*

*I really enjoyed the support group and the collaboration amongst teachers that has been brought to this classroom.*

*I am so excited to work in our grade-level groups! I find it to be most helpful to be able to talk about concerns and questions with people who have the same grade level concerns. Besides...Colleen is awesome!*

*Am looking forward to grade level meetings for classroom ideas and discussion.*

*The highlight was grade level time, I wish we had more than an hour for it.*

## **Tuesday**

The first order of business today was to determine which of the California adopted texts are used by participants in this 3-5<sup>th</sup> grade level group. Glencoe and Harcourt are the two used. Next a jigsaw of the NCTM standards for probability and statistics was read. The group learned that in grades 3-5 the NCTM recommendations for students on terms of their learning

of statistics and probability involved graphing, measurement, comparing related data sets and considering all aspects of the representation of data.

Maria then read the corresponding California Standards for Statistics at the 5th grade level, and participants became aware that by covering the NCTM standards in a comprehensive way that they would also cover the California Standards. Participants discussed the fact that the NCTM standards were “conceptual” and “saw the big picture” in terms of including analysis, prediction and interpretation, whereas the California Standards are more skill/performance based and focused on isolated procedural knowledge.

Looking at the Glencoe text for 5<sup>th</sup> grade participants noticed that there were only 2 chapters at the end for Statistics and Probability. A discussion ensued about the fact that topics were so discreet in these adopted texts and that there were many different topics to “cover” before the test. One participant commented that the only way to cover everything was to do one lesson every day and not wait for students to gain any conceptual understanding of the material. Another commented on the fact that the frustration lies in the fact that most of the administrators at her school were focused on procedures. ‘It would be nice if there were more people with this philosophy of RENEW’.

In preparation for the last part of Tuesday’s session, Maria had looked for materials/activities that would supplement the adopted texts that folk?? were using. The materials included units from Marilyn Burns texts that were appropriate to 3,4,5<sup>th</sup> grade levels. Participants then explored some of these materials at their tables and were able to take copies of those they wanted to implement. During this latter part of the activity a discussion about how to implement Math Menu’s in school classrooms took place. This is summarized procedurally below:

- Explain menu items, expectations and how to proceed to the students.
- What ever your time limit for the session make sure that the students get to participate in each of the activities unless the same skill or concept is repeated at each menu item.
- Students get to go and participate in each of the items in the order of their choosing.

One participant brought up the fact that Math Menus were a good strategy for making sure that everyone who needed it got time in a small group with the teacher (i.e. you could put yourself on the menu)

On Tuesday over 50% of participants commented positively about grade level groups in their daily feedback

*Grade level groups are the best!! We should have two hours a day in grade level groups. PEP is redundant when followed up with support group. Too much talk. Hands-on, small group/grade level are great.*

*Great ideas given to use at grade level.*

*I wish we could have more time for my ‘classroom connections’ This is my most valuable time because the information directly applies to me at grade level. I can take the games and ideas right back to my classroom and I enjoy the small group dynamic.*

*I really enjoyed the equity part of the day as well as the grade level meetings, of course.*

*It is great to be around fellow math teachers and discuss relevant issues. My favourite is the grade level pull-out time. I would recommend every math teacher to attend next summer. Great Job!!*

*I really appreciated the ideas during grade level.*

*I love the classroom connections! Great ideas and recommendations!*

*Classroom connections was very well thought out and helpful (I wish we could use the NCTM friendly standards).*

*My favourite time of the day is classroom connections.*

*Meeting with my grade level group was amazing, enlightening and inspiring.*

*I especially enjoyed the grade level meeting, again.*

### **Wednesday**

Today the grade level activity followed nicely from the previous whole group lesson on good math questioning techniques. At grade level each group examined relevant sections of their adopted text books and developed some “good math questions” to accommodate better student learning.

Again 50% of participants mentioned their enjoyment and need for the grade level time in their daily feedback.

*I also love the small group collaboration and sharing of ideas. Learning how to modify questions from textbooks to make them open ended is really great. Thanks.*

*I can't wait to create "good questions" for my own classroom. Today was great practice!*

*I cannot stress enough how great it is to meet in grade level groups to collaborate and plan our ideas!*

*I need more time to connect with such knowledgeable teachers. Their ideas are great and would like to learn even more from them.*

*Most beneficial is the grade level meeting. The conversations are incredible.*

*The grade level time was very helpful. Got a lot of planning done. I enjoyed practicing writing "good questions" in small groups. It takes time and effort to create quality questions that really assess what I intended students to learn.*

*I have developed deep admiration of my teaching colleagues. Each though we lack a lot of experience their enthusiasm and creativity exceeds that of most of our peers. Therefore, I especially appreciate the focus on grade level meetings.*

*Liked the mixer circle questions and grade level meetings of course.*

*The classroom connection is the most helpful and beneficial component so far!*

## **Thursday**

Today the grade level groups discussed balanced and performance assessments. This activity was a follow-up to the Assessment activity led by Colleen Million and Nancy Terman.

Articles/materials handed out: Administering the Math Skills Inventory. Balanced Assessment in Mathematics. Janet Doman and C. Myran, (2002).

Balanced Assessment for the Mathematics Curriculum. Elementary Grades. Assessment Package 1. Dale Seymour Publications.

Balanced Assessment for the Mathematics Curriculum. Elementary Grades. Assessment Package 2. Dale Seymour Publications.

Drawing a Spinner. Task 12. Taken from: Assessment Package 2. Dale Seymour Publications.

Danvilles's Library. Task 16. Taken from: Assessment Package 2. Dale Seymour Publications.

The participant comments in their final institute reflections were many. Here are a few illustrative examples:

*As a teacher I have had time to plan, learn new ideas, and come across new material. I have had time to process different ideas, such as classroom community in relation to math, and be able to plan or at least start planning my math curriculum for the first month of school. I feel that I have a goal, a focus, something to aim for, before school starts. I also feel that I have come away with ideas that are appropriate or adaptable across grade levels. If I do get another grade change, (lets hope not!!) I feel that I would still be confident in my ideas from what I have lerned at this seminar. I love learning ideas that are more focused at whole class, multi-age investigations because in any class (combo-class or straight grade), you have all levels of learners. These types of activities are so beneficial/differentiated for all students! I look forward to continuing with RENEW in the upcoming school year. it was the only reason I felt ok about missing a day of school for!*

*I feel rejuvenated! It is refreshing to be around other teachers who are energetic and full of new ideas! I am teaching a new grade level this year and my grade-level team was so supportive towards me. BITSA somewhat lacked the professional respect we deserve. We are in the trenches, we need to talk about the best practices used by the best teachers. When we share, we learn. RENEW knows that we know what we are doing, but enlightens us to use new strategies and make our practice the best for who really counts, the students!*

In addition to grade level group activities in which participants apply their math learning and wrestle with issues of pedagogy in their own classrooms, the activities in the rest of the retreat were representative of all RENEW institutes in which participants engage in:

- Authentic mathematics activities to learn expand their content knowledge;
- Activities with a focus on general pedagogical principals such as assessment and what it means to teach mathematics for understanding;
- Activities in which participants learn about race, class and gender issues and how they effect mathematics teaching and learning;

- Personal experience panels in which participants learn more about each other's experiences related to the teaching and learning of mathematics.

## Appendix III: Sample MEPS Report

**November Full Day MEPS**  
**8:00am-2:45pm**  
**(Evaluator visited for 2.5 hours)**

**Preceptors Present: Jackie, Laura, Judy, Kathy, Art**  
**Preceptees present: 15, 2 male, 13 female**

**Overall Rating: 4**

**Major Themes:** Small group sharing/support; Re-experiencing mathematics, pedagogical issues; setting group norms.

### **Agenda Items:**

Welcome and reading of feedback forms

Literature, "Day With No Math" by Maryann Kay

Pedagogy: Small groups: Should I be using small group instruction?

Math Activity: Fascinating Triangles

How are things going (journal write and sharing with group)

Agenda Items I was not present for:

Mixer

Break-out grade level groups

Support group norms

Support group topic: "What was your worst math experience as a learner and how has that affected you as a teacher of mathematics?"

Closure: Set up dates with your support provider for observations

### *Description*

This was my first visit to this district's MEPS. The joint MEPS arrangement started during year II of RENEW when Jackie and Laura from district 1 decided to conduct their MEPS with Alisa Mitchell from district 2. This year there was again only preceptor from district 2, Kathy. All of the morning activities that I was present for were conducted by Jackie, although other preceptors were on the agenda for afternoon activities.

The first activity after the welcome and reading was one in which Jackie shared about different kinds of small group instruction that have been used in the past in education. It was obvious that she had put a lot of thought into her talk and she had researched the topic well. She illustrated the difference between heterogeneous groups, homogeneous groups, ability groups, needs groups, cooperative groups, etc. She gave some research findings on each. She made it clear to the group that her goal was to get them to start incorporating cooperative group instruction into their classrooms. Many of the primary grade teachers indicated that they already used small, cooperative

group instruction but less of the upper grade teachers felt comfortable with them. The activity closed with each table completing the list of norms for “What I do/don’t want to encourage when working in a math group”, taken directly from the Summer 2001 Preceptor Institute.

<u>What I do want to encourage...</u>	<u>What I don’t want to encourage...</u>
Brain links	I don’t like who’s in my group
Everyone involved with a specific job to do	I can’t do it
Positive comments only	Take over person
All students on task and learning	Off task talking
	Put downs and insults
	Snoring

A short discussion ensued about how often to use small groups in the classroom. Jackie thought that using them every day was overuse, and that about once or twice a week was ample. Strategies for management of small groups was also discussed and several preceptees and preceptors gave examples of management routines that they used in their classroom.

The Math Activity in this MEP had been originally planned by Jackie and Laura but Jackie asked if she could switch activities to allow preceptees to work on one that she thought more illustrative, “Fascinating Triangles”. There was time to work on the problem in groups with manipulatives and then some time for each group to share one thing that they had found on the overhead. The math activity is attached to this report.

Some frustrations/successes shared by the preceptees.

Children are doing better in homework after preceptee modified based on Jackie’s suggestions from previous year.

One preceptee talked about their more positive classroom environment as a result of being less controlling in respect to their classroom management style.

Another preceptee talked about how frustrated she was trying to fit all of the required content she was expected to teach into the day as she had a \_ combo class.

Another preceptee admitted that it was very stressful trying to implement small group instruction in her upper grade class. She taught at an “improvement school”, 6<sup>th</sup> grade and felt under pressure to get her kids to perform to the standards.

Overall an excellent MEPS (would have been a 5 if more participation from other preceptors)

## Indicators from Classroom Observation Protocol

### I. Design

<b>a. Ratings of Key Indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. The session effectively built on participants' knowledge of content, teaching, learning and/or philosophy of math ed.				X	
2. The session included appropriate use of the structures				X	
3. The design of the session encouraged a collaborative approach to learning				X	
4. Adequate time and structure were provided hearing participants' concerns, issues and input.				X	
5. Adequate time and structure were provided for reflection and closure				X	

#### Evidence

Small group sharing and support group were included in the session. As were time for journal writing and reflection. Cooperation during the math activity was encouraged.

### II. Implementation

<b>a. Ratings of Key Indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. The session effectively incorporated instructional strategies that were appropriate for the purposes of the professional development session.			X		
2. The session effectively modeled questioning strategies that are likely to enhance the development of conceptual understanding (e.g. emphasis on questioning techniques, identifying misconceptions)				X	
3. The session took into consideration the learning styles/background and needs of the participants.			X		
4. The facilitators' background, experience and/or expertise enhanced the quality of the session					X
5. The facilitators modified the session as appropriate in response to participant needs.				X	

#### Evidence

I would have liked to have seen other preceptors included more in the morning activities. Jackie's expertise in leading professional development is evident. Session was modified when precetees brought up issues during the pedagogy activity.

### III. Culture of the Session

#### a. Ratings of Key Indicators

	1	2	3	4	5
1. Active participation of everyone was encouraged and valued.			X		
2. There was a climate of respect for participants' experiences, ideas and contributions.				X	
3. Interactions reflected collaborative working relationships among participants				X	
4. Opportunities were taken to recognize and challenge stereotypes and biases that became evident during the session.				X	
5. Participants' were encouraged to generate ideas, questions, conjectures and propositions.				X	

#### Evidence

During a non planned discussion of homework, an equity issue was brought up and addressed by Jackie regarding parental level of help during homework.

*Purpose Ratings*

**IV. Mathematics Content**

<b>a. Ratings of Key Indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Mathematics content was sound and appropriately explored.				X	
2. Participants were intellectually engaged with important ideas relevant to the focus of the session.				X	
3. Mathematics content was portrayed in a manner consistent with vision in PSSM and/or appropriate connections were made to State Standards.				X	
4. Elements of abstraction and or real-life connections were made when appropriate to do so.				X	
5. Degree of resolution/closure of conceptual understanding was appropriate for the purpose of the session.				X	

**Evidence**

All participant were intellectually engaged and the activity was just the right amount of time. Evidence of productive work taking place was seen as each group shared-back.

**V. Exploring Pedagogy**

<b>a. Ratings of Key Indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Depth and breadth of attention to student thinking/learning were appropriate for the purposes of the session.				X	
2. Participants were intellectually engaged with important ideas relevant to the focus of the session.				X	
3. The pedagogical principals introduced were consistent with investigative mathematics practices.			X		
4. Depth and breadth of attention to instructional materials intended for classroom use were appropriate for the purposes of the session and participant's needs.				X	
5. Degree of resolution/closure of conceptual understanding was appropriate for the purpose of the session.				X	

**Evidence:**

3. a score of 3 was given on question 3 because during some of the whole group discussions a view of homework in particular and math in general was given as "practice and procedures" however, the actual math activity was investigative in nature.

## VI. Leadership Content

1 2 3 4 5

### a. Ratings of Key Indicators

- |  |   |  |   |   |  |
|--|---|--|---|---|--|
| 1. Discussion on strategies for Precepting/precepteing were sound and appropriate.   |   |  |   | X |  |
| 2. Participants were intellectually engaged with important ideas relevant to the focus of the session.                       |   |  |   | X |  |
| 3. Facilitators displayed an understanding of leadership concepts consistent with the project.                               |   |  | X |   |  |
| 4. Information on mathematics reform/re-reform were presented in an appropriate manner.                                      |   |  | X |   |  |
| 5. Participants were given time and opportunity to consider how the content of the session applies to their particular role. | X |  |   |   |  |

Evidence

**3. not enough participation from some of the preceptors**

**4. see above**

**5. not applicable**

### Overall Rating of the Session

	Likely Impact on Participants' Understanding of What Mathematics is (as consistent with PSSM)		negative effect	mixed /neutral effect	positive effect
Not a session goal					
1.	Participants' understanding of important mathematical ideas.				X
2.	Participants' understanding of mathematics as a dynamic body of knowledge generated and enriched by investigation.				X
3.	Participants' confidence as a "doer" of mathematics.				X
4.	Participants' of specific math subject matter			X	
not a session goal	Likely Impact on Participants' Ability to Provide High Quality Mathematics Instruction (as consistent with norms set at institute)		negative effect	mixed /neutral effect	positive effect
1.	Participants' understanding of student thinking			X	
2.	Participants' ability to plan high quality instruction				X
3.	Participants' ability to implement national and state			X	

- standards  
4. Participants self confidence as an instructor of mathematics

X

### Reflections

Great activities-I found a way to use Fibanocci's Formula, thanks Kathy.  
Great triangle activity- Art. I really like how we're helping and sharing great ideas. Thank you for a group by grades so we can focus on grade level activities.

Thank you for a valuable learning experience-hands-on activities lead to deeper understanding and appreciation of math-loved tie-in to literature-great motivator. Also much appreciated-talk/discussion about assessment and grounding in the "why and wherefore" of assessment...to inform instruction, check student understanding, mark progress.

This session was great I enjoyed all aspects. The break out session was wonderful. I go some really good ideas to use in my classroom.

I always enjoy coming to RENEW and learning new things, but what I especially liked was the grade level grouping that we did this time. Lots o new ideas were generated. Thanks!

Jackie you are a great speaker. Your motivation keeps me attentive. The fascinating triangle activity was an eye opener since I was never exposed to these types of activities in my elementary years. The most helpful information was presented during the grade level grouping with Judy. Everything was practical and I can't wait to use some of those activities in my classroom.

Reviewing with hw-how novel! I always give work at the level we're trying to remember for the test-unfortunately mastery isn't in my diet! Small groups all working on one idea will definitely help rejuvenate my kids. Thanks, Regina.

This session was great! I loved the triangle activity. It is nice to be challenged with something other than behavior problems. The grade level groups were helpful. Can't wait to see what's next.

I would like to have a make and take day to share math ideas/games. It would be helpful to have a bibliography of children's books, resources etc. compiled into one list. I really enjoyed all the activities and sharing ideas with my colleagues.

I thought that breaking into grade-level groups was very informative and helpful. Support groups are also a great idea. I like the activities presented by others. Great Day!

Excellent, great support. Thank you for all your time and effort. I am very impressed with the amount of new lessons and knowledge that I am walking away with today. I have had so much on my plate with little time to stop and evaluate in order to add new ideas. Today was the perfect chance!

I very much enjoyed your ideas especially the small grouping and grade level tip/activities. Thank you again for all your concern and helping us to better our teaching techniques!

Today's session on groups, strategies, etc. was very interesting. I did not agree entirely with homogeneous groups. Being bad (until it was explained that sort/firm flex groups were an exception. Heterogeneous groups have some strong advantages. However, classroom management, group dynamics, etc are some pitfalls that must be planned for. I do believe homework should be practice, but I also feel that if we don't push our students to achieve higher levels, we may be teaching addition of decimals in high school (still). My guide to instruction→High expectations and frequent assessment!