Supporting the Implementation of Math Recovery®
Professional Development

A Michigan Mathematics and Science Partnership (MSP) Grant
The Muskegon Area ISD Regional Mathematics and Science Center

Annual Report
for the Period April 1, 2015 to October 31, 2015

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Supporting the Implementation of Math Recovery® Professional Development is a project funded by the Michigan Mathematics and Science Partnership competitive grants program of the Michigan Department of Education. The purpose of the project is to implement a 40-hour training called Add+VantageMR® (AVMR) designed for K-5 teachers. The training consists of two AVMR courses designed to provide a detailed understanding of how children develop understanding of early numeracy (Course 1) and number domains of place value and multiplication and division (Course 2). K-5 teachers also are trained to administer AVMR assessment tools that help them recognize students' current mathematics understanding and build on their current ways of reasoning. The training of the first cohort of teachers began in spring/summer 2015 and was implemented by the Muskegon Area ISD Regional Mathematics and Science Center (Muskegon) and the following partners:

- Calhoun Intermediate School District (Calhoun)
- Eastern Upper Peninsula Mathematics and Science Center (EUP)
- Mason-Lake Oceana Mathematics and Science Center (Mason)

Each partner also hosted a one-day professional learning session for school and district administrators during which participants were trained to observe teacher-student interactions and provide constructive feedback. Two of the partners (Muskegon and Calhoun) offered a 10-day Math Recovery® Intervention Specialist (MRIS) course for teacher leaders. This training provided participants with a more in-depth understanding of ideas presented in the AVMR course.

The following document reports on Year 1 evaluation data that reached the analysis and interpretation stage. Additional data were collected and will be reported in 2016.

Highlights of Findings

Ninety-seven (97) Cohort 1 teachers, most of whom teach K-5, participated in the eight days (approximately 40 hours) of Math Recovery® AVMR training at the four partner sites: Calhoun Intermediate School District (26), Eastern Upper Peninsula Math and Science Center (19), Mason-Lake Oceana Math and Science Center (29), and Muskegon Area ISD Math and Science Center (23). ***Cohort 1 teachers were recruited from at least 36 school districts.***

Comments from an end-of-program survey indicated that Cohort 1 teachers…

- ***…were generally satisfied with program arrangements.*** Facilitators were effective in communicating ideas, organizing sessions such that everyone was actively involved, and establishing a collaborative and helpful tone.

- ***…learned several key ideas central to Math Recovery® AVMR training,*** including: there are constructs or levels of student understanding, it is important to not focus on memorization or algorithms too much or too early, it is essential to help students build a foundation in math or develop basic skills, and students need to develop strategies that work for them.

- ***…planned to use the results of the AVMR diagnostic assessments*** to prepare lessons; move students to the next level or strengthen their math skills; help individual students, groups of students, and struggling students; and move students beyond facts/algorithms or help them achieve a deeper understanding of math.

Several program strengths were identified on the end-of-program survey; the most common was the workshop facilitators who were described as patient, organized, professional, knowledgeable, helpful, and non-judgmental. Other strengths included the collaboration among teachers or districts, the opportunity to view numerous videos of teacher-student interactions, and the safe or non-threatening environment.

Ninety-eight percent (98%) of the Cohort 1 teachers felt the program met their expectations. One teacher remarked on the end-of-program survey, "We needed this. We needed help to diagnose and prescribe activities and strategies to help students." Another commented, "This training really changed the way I look at the progression of students learning in math as well as how I will teach math."

Teachers made statistically significant improvement in their mathematics content knowledge. A teacher pre/post math content test was developed cooperatively between the evaluation team and the project leaders and was reviewed by mathematics education professionals before being administered. The mean score (for all Cohort 1 teachers combined) increased from 70.0% on the pre-test to 79.0% on the post-test ($p\text{-value} = 0.001$; $n = 87$).

Teachers improved in their ability to provide suggestions that help students develop their understanding of math. Cohort 1 teachers watched two short videos of teacher-student math activities as a pre-test on the first day of the Math Recovery AVMR training and answered the following question after viewing each video: "What would you say and do to help the student develop understanding of the mathematics in this situation?" They again watched the videos and answered the question as a post-test on the last day of the training. A scoring rubric was developed to assess the consistency of teachers' responses with Math Recovery® ideas. The mean score (for all Cohort 1 teachers combined) increased from 29.1% on the pre-test to 53.0% on the post-test ($p\text{-value} = < 0.001$; $n = 90$).

About Supporting the Implementation of Math Recovery®

Supporting the Implementation of Math Recovery® has six major objectives: 1) deepen teacher mathematics content knowledge and understanding of the continuum of mathematical thinking, assessment tasks, and instruction to move students forward along the continuum; 2) strengthen district level expertise in providing on-demand support to teachers to promote strong teaching skills and in turn improve student mathematics achievement; 3) provide administrative support for Math Recovery® implementation to create a system that will allow teachers to close the achievement gap of students in mathematics; 4) improve student achievement in mathematics by developing mathematical understandings which move students along the continuum of mathematics thinking; 5) build capacity in Michigan in understanding the development of early numeracy and to support teachers in closing the mathematics achievement gap in Michigan; and 6) provide a coherent continuum of supports for all students (multi-tiered system of supports) to close the achievement gap and decrease the number of students needing tier 2 and 3 supports.

The Math Recovery® program is a project dedicated to using Math Recovery® resources as a tool for deepening teacher content knowledge, promoting strong teaching skills, and closing achievement gaps in partner schools. The Muskegon Area ISD Regional Mathematics and Science Center and its three partners understand that for such training to be effective, teachers must have the support of school and district administrators, trained teacher leaders, and higher education faculty. Project leaders have developed the following programmatic components assumed to build local and regional capacity and expertise in Math Recovery® instructional and assessment practices:

Teacher Training. The goal of the Math Recovery® Add+VantageMR® (AVMR) two-course training is to provide teachers with efficient assessment tools to help them recognize their students' current understandings of number concepts in the domains of "Operations and Algebraic Thinking" and "Numbers and Operations in Base Ten" in the Common Core State Standards (CCSS). It offers a framework to increase students' level of sophistication in solving problems similar to progressing students in their reading level. AVMR describes constructs that provide a focus for building on students' knowledge to move them to higher levels of understanding and sophistication in solving math problems. Course 1 provides a detailed understanding of how children develop understanding of early numeracy, and Course 2 focuses on number domains of place value and multiplication and division.

Each partner provided the AVMR training to two cohorts of K-5 teachers. Cohort 1 began April 2015 and ended in August 2015 (Table 1):

Table 1. Cohort 1 Teacher AVMR Training Dates by Site

Course	Muskegon	Calhoun	EUP	Mason
AVMR 1	April 21-22, 27-28, 2015	June 22-25, 2015	June 22-25, 2015	July 13-14, 15-16, 2015
AVMR 2	July 7-8, 9-10, 2015	August 10-13, 2015	August 12-13, 19-20, 2015	July 20-23 2015

Cohort 2 began in October 2015 and will end in March 2016 (Table 2):

Table 2. Cohort 2 Teacher AVMR Training Dates by Site

Course	Muskegon	Calhoun	EUP	Mason
AVMR 1	October 5-6, 19-20, 2015	October 12-15, 2015	October 12-13, 19-20, 2015	November 5-6, 16, 21, 2015
AVMR 2	December 10-11, 19-20, 2015	December 7-8, 14-15, 2015	February 22-23, 29; March 1, 2016	February 22-23; March 8, 12, 2016

K-5 teachers were recruited from at least 36 school districts to complete the training.

Table 3. Number of Teacher Participants and School Districts Represented

Site	No. of Teachers		School Districts Represented
	Cohort 1	Cohort 2	
Calhoun	26	33	8
EUP	19	27	11
Mason	29	N/A*	7
Muskegon	23	36	10
Total	**97**	**96**	**36**

*Training scheduled to begin November 5; participant data not yet available.

Administrator Training. The goal of the administrator training is to engage school and district administrators in learning and conversation around providing constructive feedback to teachers using a teacher evaluation rubric (*The Math Recovery® Implementation Coaching Tool).* The training began with a one-day professional development session that outlined how to observe teacher-student interactions and provide constructive feedback to teachers based on the following questions from the rubric: (1) What is the evidence of students developing conceptual understanding of mathematical ideas before fluency/procedures are addressed? (2) What is the evidence of the teacher using formative assessment to inform instruction? (3) What is the evidence of differentiated instruction? (4) What is the evidence of teachers connecting student thinking to mathematical notation? (5) What is the evidence of students exhibiting problem solving characteristics? (6) What other components of quality math instruction are seen? Administrators will later engage in a practice observation of a teacher that will included a debrief with the teacher and with leadership. They will then complete two observations with a partner during the upcoming school and will meet for a one-hour "reflection and next steps" meeting that will be scheduled at the end of the school year.

Each partner provided the one-day professional learning session for school and district administrators in August or October 2015. All sites offered the training to one or two cohorts of administrators:

Table 4. Administrator Training Dates by Site

Course	Muskegon	Calhoun	EUP	Mason
Cohort 1	October 2, 2015 (morning)	August 20, 2015	October 1, 2015	October 14, 2015
Cohort 2	October 2, 2015 (afternoon)	October 19, 2015	--	October 20, 2015

Administrators included principals, assistant principals, curriculum directors, and superintendents; and were recruited from 27 school districts.

Table 5. Number of Administrators and School Districts Represented

Site	No. of Administrators		School Districts Represented
	Cohort 1	Cohort 2	
Calhoun	6	10	8
EUP	9	--	6
Mason	4	4	5
Muskegon	11	8	8
Total	**30**	**22**	**27**

Teacher Leader Training. A selected group of teacher leaders are taking the Math Recovery® Intervention Specialist (MRIS) course, the goal of which is to develop in-depth understanding of learning trajectories in addition & subtraction, place value, and multiplication & division concepts, as well as a systematic approach to planning and monitoring K-5 intervention for students identified as needing additional support. Teacher leaders are participating in 10 face-to-face sessions, two one-on-one coaching sessions, and two course projects that demonstrate understanding of Math Recovery® assessment and instruction.

Two partners (Muskegon and Calhoun) are hosting the 10 face-to-face MRIS sessions for teacher leaders (Table 6):

Table 6. Teacher Leader MRIS Training Dates by Site

Sessions	Muskegon	Calhoun
Days 1-4	August 10-13, 2015	August 17-18, 20-21, 2015
Days 5-7	September 28-30, 2015	September 28-30, 2015
Days 8-10	January 5-7, 2016	January 5-7, 2016

K-5 teachers from 13 school districts were recruited to be teacher leaders (Table 7):

Table 7. Number of Teacher Participants and School Districts Represented

Site	No. of Teacher Leaders	School Districts Represented
Calhoun	10	6
Muskegon	9	7
Total	**19**	**13**

Institute of Higher Education Partnership. The goal of the higher education partner is to create a mutually beneficial relationship between students, teacher-candidates and teacher educators. To accomplish this goal, Dr. David Coffey from Grand Valley State University (GVSU) attended the Cohort 1 AVMR training. After attending this training, Dr. Coffey, in cooperation with the development team, began work on creating a GVSU course for elementary education math majors that integrates AVMR training into the coursework. The goal is to involve 15 students in the course during the spring/summer of 2016.

Project Management Team

The project is led by Kristin Frang, a mathematics consultant of the Muskegon Area ISD Regional Mathematics and Science Center. She is supported by Rachel Zorn who serves as the Project Coordinator.

One ISD and two Mathematics and Science Centers partnered with the Muskegon Area ISD Regional Mathematics and Science Center to implement the program. The leadership team includes Michelle Tatrow (Calhoun ISD Math Consultant), Julie Bazinau (EUP Math Recovery® Specialist), and Meg Brown (West Short ESD K-5 Interventionist/Mathematics Consultant).

Year 1 Evaluation Design and Data Collection & Analysis

A team from Science and Mathematics Program Improvement (SAMPI) at Western Michigan University is serving as external evaluators for *Supporting the Implementation of Math Recovery®*. The evaluation team includes Dr. Kristin Everett, Senior Research Associate, Dr. Robert Ruhf, Senior Research Associate, and Dr. Mary Anne Sydlik, Director of SAMPI, and other SAMPI staff as needed.

The Math Recovery® evaluation is framed by the following questions: 1) What has been the impact of the program on teachers (mathematics content knowledge, classroom practice), students, and administrators and schools? 2) What has been the impact of the program on higher education professors and their future classes? 3) Have the project goals and objectives been accomplished as planned? 4) What are the strengths and limitations of the project? This report is based on data collected and analyzed as of October 2015. Additional data were collected and will be reported in 2016.

During 2015, SAMPI completed the following evaluation tasks for Cohort 1:

- Developed and administered various teacher surveys, including pre-program and end-of-program surveys for AVMR and MRIS trainings.
- Administered a teacher pre/post mathematics content test.
- Developed and administered a teacher video pre/post test. Teachers viewed two short video clips of teacher-student math activities and responded to the following question at the beginning (pre) and end (post) of AVMR training: "What would you say and do to help the student [in each video] develop understanding of the mathematics in this situation?"
- Observed select professional development sessions, including day 1 of AVMR Course 1 at all four sites, the Cohort 1 administrator training session at Muskegon, and day 5 of the MRIS Course at Calhoun.

SAMPI will complete the same tasks for Cohort 2 during the 2015-16 school year. In addition, SAMPI will conduct interviews with teachers and members of the leadership during the spring of 2016 and will examine the results of AVMR assessments completed by Cohort 2 participants.

SAMPI is currently conducting classroom observations of a sample of 20 teachers (5 per site) and administrating a pre/post math content test to students of participating teachers for grades K, 1, 2, 3, 4, and 5. The student tests were developed by SAMPI and were reviewed and validated by mathematics education professionals. SAMPI also is currently observing administrator training professional development sessions and administrating a video pre/post test to the administrator participants.

SAMPI conducted a pre-program interview with the university faculty involved in the project. A post-program interview will be conducted in spring 2016.

Cohort 1 Teacher Survey Results

This section summarizes data collected by the evaluation team from Cohort 1 teacher participants through 1) a pre-program survey administered on the first day of AVMR Course 1, 2) a separate and different end-of-program survey administered on the last day of AVMR Course 2, 3) a pre/post mathematics content test, and 4) a video pre/post test.

### 1) Pre-Program Survey of Cohort 1 Teacher Participants

Ninety-seven (97) Cohort 1 teachers completed a pre-program survey on the first day of AVMR Course 1 (Table 8). Sixteen (16%) were special education teachers.

Table 8. Number of Teachers

	Total Number of Teachers	Special Education Teachers
Calhoun	26	1 (4%)
EUP	19	3 (16%)
Mason	29	6 (21%)
Muskegon	23	6 (26%)
Total	**97**	**16 (16%)**

The survey asked about teachers' backgrounds and expectations and included items rated on a 5-point scale related to how frequently they used certain math practices based on the guiding principles of Math Recovery®. A summary of their responses follows:

The majority of the teacher participants taught elementary (K-5) level:

Figure 1. Grade Levels Taught (Some taught more than one level)
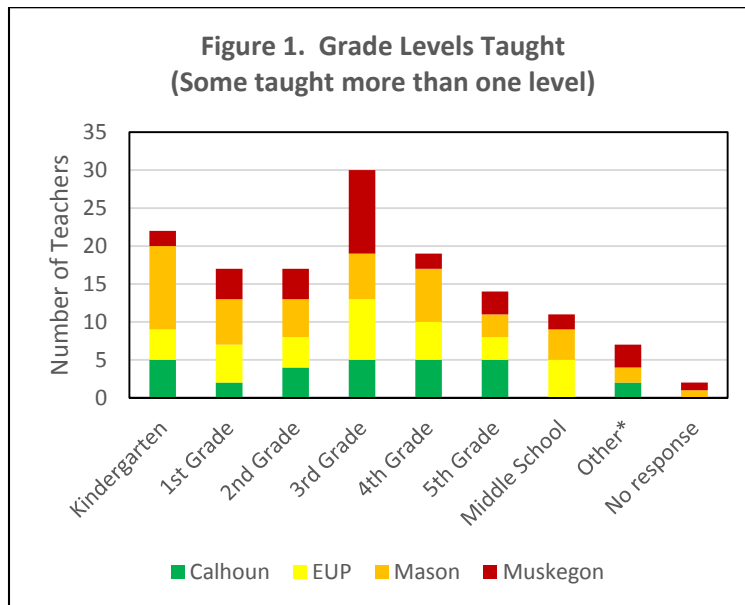
* Calhoun: K-5 Instructional coach (2); Mason: Resource Room (2);
   Muskegon: Resource Room (2), Special education – no grade identified (1)

Twenty Michigan school districts were represented by the teacher participants:

Table 9. Number of School Districts Represented

	Districts
Calhoun	2
EUP	7
Mason	7
Muskegon	4
Total	**20**

Teachers had a wide range of teaching experience, although 79% had taught for at least 6 years:

Figure 2. Years of Teaching
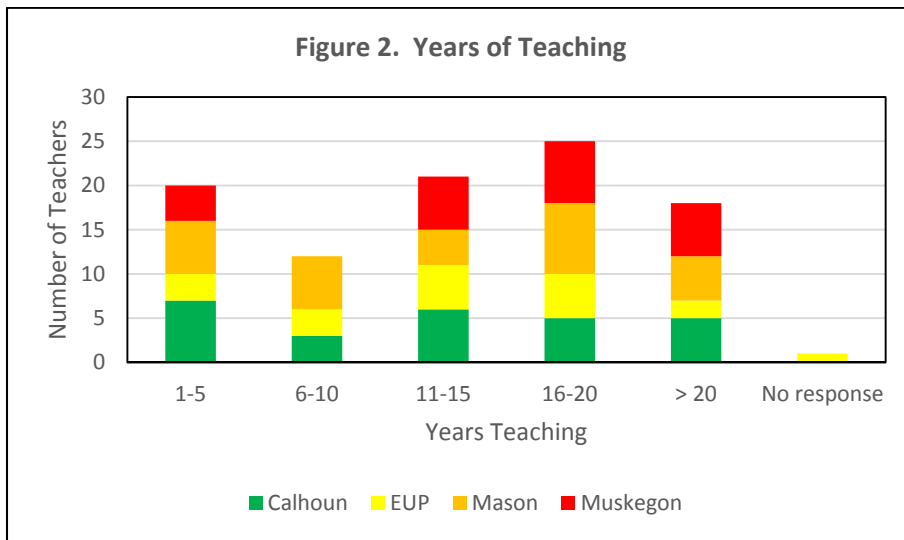
The majority did not have a strong mathematics background. Only fifteen teachers (15%) completed a mathematics minor in college.

Table 10. Math Minor in College

	Number of teachers
Calhoun	6
EUP	3
Mason	4
Muskegon	2
Total	**15**

Fifty-eight (60%) teachers had participated in five or fewer days of professional development (PD) related to math and pedagogy in the past three years:
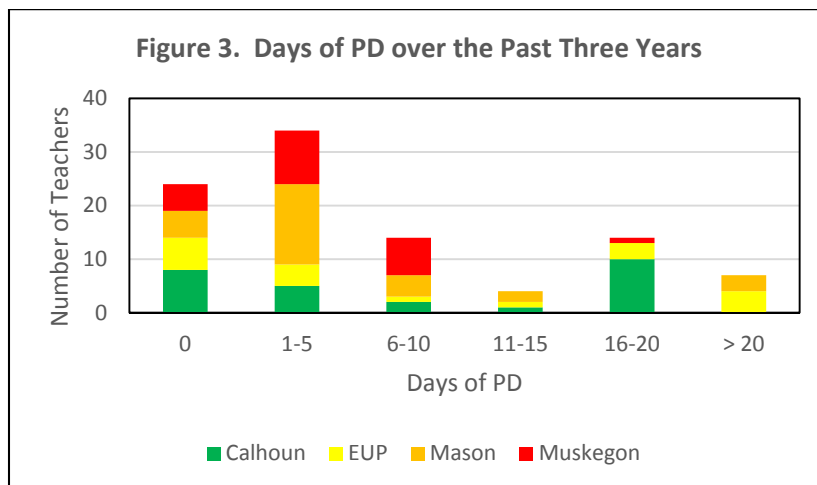

Figure 3. Days of PD over the Past Three Years

Participants were asked to use a 5-point scale (with 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = all or almost all math lessons) to describe how frequently they used certain math practices based on the guiding principles of Math Recovery®:

- Problem based/inquiry based teaching.
- Initial and ongoing assessment.
- Teaching just beyond the cutting edge (ZPD).
- Selecting from a bank of teaching procedures.
- Engender more sophisticated strategies.
- Observing the child and fine-tuning teaching.
- Incorporating symbolizing and notating.
- Sustained thinking and reflection.
- Child intrinsic satisfaction.

They could also circle the statement, "I don't know what this is." *Teachers tended to report most often using "Observing the child and fine-tuning teaching."* *Further details are in Appendix 1.*

Findings from open-ended survey items included the following:

- *Teachers gave a variety of reasons for participating in the program:* to better understand and/or support students, to help struggling students, to receive teaching tools and strategies, to improve math teaching/delivery/instruction, to improve their own learning or knowledge of math, to learn ways to assess student understanding, to learn more about Math Recovery®, to make connections to the next steps for learning math, and they were asked or required to by their staff or school.

- *Teachers had clear ideas about what they expect from the program:* a better understanding of how to support their students, strategies for teaching math, stronger math knowledge, a better understanding of the learning progressions, more resources and tools to help their students, strategies for reaching struggling students, and a better understanding of the changing ways students are being taught math.

- *Teachers had clear ideas about how their students should benefit:* they will gain improved understanding of or performance in math, they will learn new math strategies or ideas, they will learn from a more knowledgeable or skilled teacher, they will have a teacher who better understands how they learn, and they will have a teacher who will be able to assess where they are with their understanding or skills.

2) End-of-Program Survey of Cohort 1 Teacher Participants

Cohort 1 teacher participants completed a separate and different end-of-program survey at the end of the AVMR Course 2. A summary of their responses is as follows:

Teacher participants rated program objectives on a five-point scale according to: 1) their perception of the value of the objective, and 2) how well they think the objective was accomplished. A "5" represented the highest value. T-tests were used to look for significant differences between "value" and "accomplished" ratings. Teachers were also asked to provide comments to explain their ratings. *Details are in Appendix 2.* All mean "value" ratings were at the high end of the scale ($\bar{x} > 4.00$), *indicating teachers recognized the importance of each objective (Table 11).*

Table 11. Project Objectives

Program Objectives	Site	n	Value	Accomplished	p-value
Deepen teacher understanding of mathematics content knowledge.	Calhoun	24	4.29	3.79	0.049*
	EUP	16	4.88	4.38	0.006*
	Mason	29	4.76	4.38	0.005*
	Muskegon	22	4.77	4.45	0.050*
Deepen teacher understanding of the continuum of mathematical thinking.	Calhoun	23	4.52	4.09	0.022*
	EUP	16	4.81	4.50	0.020*
	Mason	29	4.72	4.45	0.018*
	Muskegon	22	4.77	4.23	0.004*
Deepen teacher understanding of assessment tasks and instruction to move students forward along the continuum of mathematical thinking.	Calhoun	23	4.52	4.00	0.004*
	EUP	16	4.88	4.38	0.015*
	Mason	29	4.83	4.28	< 0.001*
	Muskegon	22	4.73	4.41	0.069
Teachers have access to on-demand support to implement Math Recovery® assessment and instruction practices.	Calhoun	23	4.39	3.91	0.031*
	EUP	16	4.50	4.19	0.020*
	Mason	29	4.72	4.38	0.023*
	Muskegon	22	4.73	4.14	0.004*
Reduce the amount of students needing mathematics intervention.	Calhoun	15	4.20	3.60	0.033*
	EUP	14	4.50	4.29	0.082
	Mason	27	4.70	3.52	< 0.001*
	Muskegon	21	4.67	4.19	0.014*

* Statistically significant difference between "Value" and "Accomplished."

Mean "accomplished" ratings were lower than mean "value" ratings for all items at all sites, most of which were statistically significant (Table 11). *This suggests teachers believed project objectives were not fully accomplished.* The comments below are examples of explanations of teacher ratings:

- **Objective 1: Deepen teacher understanding of mathematics content knowledge.** One Calhoun teacher commented that she grew tremendously in her knowledge of mathematics, but was quick to add, "I'm not willing to assume that I'm awesome yet. I just need more experience." Similar sentiments were expressed by three Mason teachers and one Muskegon teacher.

- **Objective 2: Deepen teacher understanding of the continuum of mathematical thinking.** One Mason teacher remarked, "A summer class limits immediate use of knowledge. I need time." A Muskegon teacher made a similar comment: "It can be too much in a short amount of time." Overall, however, teachers grew in their understanding of the continuum of mathematical thinking. One EUP teacher remarked, "I got a lot of information from this and I felt it opened my eyes to math instruction."

- **Objective 3: Deepen teacher understanding of assessment tasks and instruction to move students forward along the continuum of mathematical thinking.** Teachers saw great value in the assessments. One Mason teacher called them "great assessment tools" and another remarked, "I am able to see exactly what students need before moving on." Nevertheless, many felt they needed more practice. One Mason teacher stated, "I still need more work." Others said they needed more practice with the assessments or that their confidence would grow as they began to use the assessments.

- **Objective 4: Teachers have access to on-demand support to implement Math Recovery® assessment and instruction practices.** Teachers felt they had the support they needed, but a few were uncertain about whether that support would continue during the school year. One Muskegon teacher stated, "I have support during the training, but during the school year, I don't know." Another Muskegon teacher commented, "I have support as of today's date."

- **Objective 5: Reduce the amount of students needing mathematics intervention.** Several expressed uncertainty about this. One Mason teacher commented, "This will depend on how successful I am at using the assessments and then designing activities to help." One Muskegon teacher said, "I still would value hearing more about how assessments should be used with a classroom setting."

Teachers also rated the following statements in terms of their perception *before* attending AVMR Course 1 (pre) and their perception *after* attending AVMR Course 2 (post). **A "1" on the scale represents the lowest value; a "5" represents the highest value:**

1. How would you rate your knowledge of how children make sense of early mathematics?
2. How would you rate your knowledge of how children make sense of early multiplication/division development?
3. How would you rate your knowledge of how children make sense of early place value development?
4. How secure are you in using questioning techniques to gain insight into student understanding of math concepts?
5. How well do your current mathematics assessments inform you of your students' mathematical understanding?
6. How well do your current materials help guide you in differentiating instruction for your students?
7. How familiar are you with the new Common Core standards for mathematics?

Statistically significant increases pre-to-post were observed for all items at all sites, except "How familiar are you with the new Common Core standards for mathematics?" at Calhoun. This suggests that after attending AVMR training, *(1) teachers felt more knowledgeable of how children make sense of early mathematics, early multiplication/division development, and early place value development; (2) teachers were more confident in their use of questioning techniques; (3) teachers were more*

comfortable with their current mathematics materials and assessments; and (4) teachers were more familiar with the Common Core standards. *Details are in Appendix 2.*

Findings from open-ended survey items included the following:

- *Teachers were generally satisfied with program arrangements.* Facilitators were effective in communicating ideas, organizing sessions such that everyone was actively involved, and establishing a collaborative and helpful tone. *There were isolated concerns about the facilitator of Course 2 at the Mason site.* One remarked, "Our Course 2 facilitator was not as engaging as the Course 1 facilitator." Another commented, "[The Course 1 facilitator] was a '5;' [the Course 2 facilitator] was a '3.'" *Details are in Appendix 2.*

- *Numerous program strengths were identified; the most common was the instructors.* Other strengths included: activities/assessments to help teachers discover the level/construct of their students' understanding, hands-on games and/or engaging activities, materials for the assessments, collaboration among teachers or districts, the opportunity to view numerous videos of teacher-student interactions, and the safe or non-threatening environment. Table 12, showing categories of responses by site, is found below.

Table 12: Identified Program Strengths by Site Based on Teacher Comments

CAL = Calhoun Intermediate School District; EUP = Eastern UP Math and Science Center;
MAS = Mason-Lake Oceana Math and Science Center;
MUS = Muskegon Area ISD Regional Math and Science Center

Category	CAL (24)	EUP (16)	MAS (29)	MUS (22)	Total (91) No.	Total (91) %
Positive comments about facilitators (amazing, great, knowledgeable, helpful, non-judgmental, patient, organized, professional, etc.).	9	1	12	9	**31**	**34%**
Activities/assessments to help us discover the level/construct of our students' understanding.	5	5	5	4	**19**	**21%**
We received/tried hands-on games and engaging activities.	4	4	3	6	**17**	**19%**
The materials (in general or for assessments).	4	3	5	3	**15**	**16%**
Applicable content.	1	2	8	4	**15**	**16%**
Miscellaneous comments.*	3	2	7	3	**15**	**16%**
Collaboration with other teachers or districts.	1	1	5	5	**12**	**13%**
Videos of teacher-student interactions.	5	1	2	3	**11**	**12%**
It was well-organized.	1	1	2	4	**8**	**9%**
Time for discussions/dialogue.	2	--	3	1	**6**	**7%**
Practice time (in general).	4	--	--	1	**5**	**5%**
Practicing assessments with actual students.	--	2	2	--	**4**	**4%**
Clear explanations and guidelines for the assessments.	--	2	2	--	**4**	**4%**
Time to "dig deep" or gain a deeper understanding of how students learn math.	2	1	--	--	**3**	**3%**
The safe or non-threatening environment.	--	--	--	2	**2**	**2%**
The sessions were engaging or interactive.	--	--	2	--	**2**	**2%**

* Some gave more than one response; the number of responses is greater than the number of participants.

- *Eighty-nine teachers (98%) felt the program met their expectations.*

- *Teachers reported learning key ideas central to the Math Recovery® AVMR training,* including: there are constructs or levels of student understanding, it is important to not focus

on memorization or algorithms too much or too early, it is essential to help students build a foundation in math or develop basic skills, and students need to develop their own strategies or strategies that work for them.

- *Teachers indicated several ways they plan to use what they learned,* **including:** use the results of the AVMR diagnostic assessments to plan lessons, move students to the next level, or strengthen their math skills; use the AVMR assessments to help individual students, groups of students, and struggling students; and use what they have learned to move students beyond facts/algorithms or help them achieve a deeper understanding of math.

- *A few teachers from three of the sites had questions that were not answered or issues that were not resolved:*

  ➤ **Calhoun:** "I'm just hoping for follow-up," and "I just need more hands-on time to really see the levels and how to link them to increase learning."
  ➤ **Mason:** "How will I create a great experience for my students in my class using this? I am a bit overwhelmed!" and "I'm still a little worried about differentiating as a management issue."
  ➤ **Muskegon:** "Is there a certain amount of time that needs to pass between assessments for an individual student?" "I still would value hearing how assessments should be used with classroom setting. Is it everyone, or just those suspected to be in need?" and "I am still processing the organization of materials in the classroom and how to mesh strategies with curriculum effectively."

3) Pre/Post Test of Teacher Participants' Math Content Knowledge

The Math Recovery® AVMR course was offered to 97 Cohort 1 teachers, 87 (90%) of which finished the course and completed a math content pre/post test. Ten teachers did not complete for these reasons: they no longer teach math, they moved to a different school, and they dropped out of the grant. The test was developed cooperatively between the evaluation team and the project leaders and was reviewed by mathematics education professionals before being administered. The test contained 12 items representing math concepts and strategies teachers were exposed to during Math Recovery® training. Some items had several parts, bringing to the total possible score to 25 points.

Teachers made significant improvement in their mathematics content knowledge. Paired samples t-tests were used to look for significant improvements in teacher content knowledge based on pre-to-post test scores. Mean scores for all teachers combined increased from 70.0% on the pre-test to 79.0% on the post-test (p-value = 0.001; n = 87). Our analysis also indicated that teacher pre/post scores improved for each site, although only Mason showed statistically significant pre-to-post change (Table 13).

Table 13. Cohort 1 Teacher Pre/Post Test Analysis by Site

Total possible score = 25	n	Pre-Test		Post-Test		p-value
		Score	%	Score	%	
All Teachers	**87**	**17.5**	**70.0%**	**19.8**	**79.0%**	**0.001***
Calhoun	23	17.5	70.1%	19.4	77.7%	0.158
EUP	16	17.7	70.8%	19.4	77.8%	0.319
Mason	28	17.3	69.0%	20.8	83.3%	0.002*
Muskegon	20	17.7	70.8%	18.9	75.6%	0.366

* Statistically significant difference.

4) Video Pre/Post Test

Teacher participants watched two short videos of teacher-student math activities as a pre-test on the first day of AVMR Course 1 and answered the following question after viewing each video: "What would you say and do to help the student develop understanding of the mathematics in this situation?" They again watched the videos and answered the question as a post-test on the last day of AVMR Course 2. A rubric was developed based on Math Recovery® principles to assess teachers' responses:

- 0 points – No, irrelevant, or nonsensical response; or vague/very general response
- 1 point – One or more specific inappropriate actions
- 2 points – One or more specific inappropriate and one or more appropriate actions
- 3 points – One specific appropriate action
- 4 points – Two or more specific appropriate actions

A consensus list of "appropriate" and "inappropriate" actions was created for each video in cooperation with the leadership team. Teachers could receive 4 points for each video for a total score of 8.

Teachers' suggestions for appropriate actions consistent with Math Recovery® training showed statistically significant improvements from pre-to-post. Paired samples t-tests were used to look for changes based on pre-to-post test scores. Mean scores increased from 29.1% on the pre-test to 53.0% on the post-test (p-value < 0.001; n = 90). Our analysis also indicated that teacher pre/post scores improved for each site, only EUP did not show statistically significant pre-to-post change (Table 14).

Table 14. Cohort 1 Teacher Video Pre/Post Test Analysis by Site

Total possible score = 8	n	Pre-Test		Post-Test		p-value
		Score	%	Score	%	
All Teachers	**90**	**2.33**	**29.1%**	**4.24**	**53.0%**	**< 0.001***
Calhoun	23	2.13	26.6%	4.91	61.4%	< 0.001*
EUP	17	2.12	26.5%	2.88	36.0%	0.569
Mason	29	2.41	30.2%	5.17	64.6%	< 0.001*
Muskegon	21	2.67	33.3%	4.00	50.0%	< 0.001*

* Statistically significant difference.

Appendix 1:
Supporting the Implementation of Math Recovery® Professional Development
A Michigan Mathematics and Science Partnership (MSP) Grant
The Muskegon Area ISD Regional Mathematics and Science Center

Mathematics Teaching Practices

Prepared by External Evaluation Team
Science and Mathematics Program Improvement (SAMPI)
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October 2015

Cohort 1 teacher participants completed a pre-survey on the first day of AVMR Course 1 that included several items about mathematics teaching practices related to the guiding principles of Math Recovery®. Teachers were asked how often they engaged in each practice in their mathematics lessons. Each item was rated on a 5-point scale, with 1 = never and 5 = all or almost all math lessons. Results are shown below for each of the four sites.

Calhoun Intermediate School District	1 Never	2 Rarely (a few times a year)	3 Some-times (once or twice a month)	4 Often (once or twice a week)	5 All or almost all math lessons	I don't know what this is	No response	Mean
a. Observing the child and fine-tuning teaching.	2 (8%)	1 (4%)	2 (8%)	7 (27%)	13 (50%)	1 (4%)	--	**4.12**
b. Sustained thinking and reflection.	2 (8%)	--	2 (8%)	13 (50%)	5 (19%)	3 (12%)	1 (4%)	**3.86**
c. Initial and ongoing assessment.	2 (8%)	--	6 (23%)	8 (31%)	8 (31%)	2 (8%)	--	**3.83**
d. Selecting from a bank of teaching procedures.	3 (12%)	2 (8%)	4 (15%)	3 (12%)	12 (46%)	2 (8%)	--	**3.79**
e. Problem based/inquiry based teaching.	2 (8%)	1 (4%)	4 (15%)	13 (50%)	5 (19%)	1 (4%)	--	**3.72**
f. Child intrinsic satisfaction.	2 (8%)	--	2 (8%)	8 (31%)	3 (12%)	10 (38%)	1 (4%)	**3.67**
g. Engender more sophisticated strategies.	2 (8%)	2 (8%)	3 (12%)	10 (38%)	--	9 (35%)	--	**3.24**
h. Teaching just beyond the cutting edge (ZPD).	1 (4%)	--	2 (8%)	2 (8%)	--	20 (77%)	1 (4%)	**3.00**
i. Incorporating symbolizing and notating.	3 (12%)	1 (4%)	5 (19%)	5 (19%)	1 (4%)	11 (42%)	--	**3.00**

Eastern UP Math and Science Center	1 Never	2 Rarely (a few times a year)	3 Some-times (once or twice a month)	4 Often (once or twice a week)	5 All or almost all math lessons	I don't know what this is	No response	Mean
a. Observing the child and fine-tuning teaching.	--	--	4 (21%)	2 (11%)	11 (58%)	1 (5%)	1 (5%)	**4.41**
b. Problem based/inquiry based teaching.	--	--	6 (32%)	7 (37%)	6 (32%)	--	--	**4.00**
c. Initial and ongoing assessment.	--	2 (11%)	5 (26%)	8 (42%)	4 (21%)	--	--	**3.74**
d. Sustained thinking and reflection.	--	2 (11%)	5 (26%)	5 (26%)	4 (21%)	3 (16%)	--	**3.69**
e. Child intrinsic satisfaction.	--	--	5 (26%)	5 (26%)	1 (5%)	8 (42%)	--	**3.64**
f. Selecting from a bank of teaching procedures.	1 (5%)	--	9 (47%)	5 (26%)	1 (5%)	3 (16%)	--	**3.31**
g. Engender more sophisticated strategies.	--	1 (5%)	9 (47%)	--	1 (5%)	8 (42%)	--	**3.09**
h. Incorporating symbolizing and notating.	2 (11%)	2 (11%)	3 (16%)	1 (5%)	1 (5%)	9 (47%)	1 (5%)	**2.67**
i. Teaching just beyond the cutting edge (ZPD).	--	1 (5%)	1 (5%)	--	--	16 (84%)	1 (5%)	**2.50**

Mason-Lake Oceana Math and Science Center	1 Never	2 Rarely (a few times a year)	3 Some-times (once or twice a month)	4 Often (once or twice a week)	5 All or almost all math lessons	I don't know what this is	No response	Mean
a. Observing the child and fine-tuning teaching.	--	--	2 (7%)	11 (38%)	15 (52%)	--	1 (3%)	**4.46**
b. Selecting from a bank of teaching procedures.	--	--	9 (31%)	9 (31%)	5 (17%)	5 (17%)	1 (3%)	**3.83**
c. Problem based/inquiry based teaching.	--	--	8 (28%)	17 (59%)	3 (10%)	--	1 (3%)	**3.82**
d. Teaching just beyond the cutting edge (ZPD).	--	--	6 (21%)	5 (17%)	3 (10%)	14 (48%)	1 (3%)	**3.79**
e. Incorporating symbolizing and notating.	1 (3%)	3 (10%)	5 (17%)	6 (21%)	5 (17%)	8 (28%)	1 (3%)	**3.55**
f. Initial and ongoing assessment.	1 (3%)	2 (7%)	9 (31%)	13 (45%)	3 (10%)	--	1 (3%)	**3.54**
g. Sustained thinking and reflection.	--	2 (7%)	11 (38%)	11 (38%)	2 (7%)	2 (7%)	1 (3%)	**3.50**
h. Child intrinsic satisfaction.	--	1 (3%)	9 (31%)	12 (41%)	--	6 (21%)	1 (3%)	**3.50**
i. Engender more sophisticated strategies.	--	1 (3%)	15 (52%)	1 (3%)	2 (7%)	9 (31%)	1 (3%)	**3.21**

Muskegon Area ISD Regional Math and Science Center	1 Never	2 Rarely (a few times a year)	3 Some-times (once or twice a month)	4 Often (once or twice a week)	5 All or almost all math lessons	I don't know what this is	No response	Mean
a. Observing the child and fine-tuning teaching.	--	1 (4%)	1 (4%)	9 (39%)	10 (44%)	1 (4%)	1 (4%)	**4.33**
b. Problem based/inquiry based teaching.	--	--	6 (26%)	6 (26%)	8 (35%)	2 (9%)	1 (4%)	**4.10**
c. Sustained thinking and reflection.	--	1 (4%)	5 (22%)	5 (22%)	8 (35%)	2 (9%)	2 (9%)	**4.05**
d. Selecting from a bank of teaching procedures.	1 (4%)	--	4 (17%)	9 (39%)	4 (17%)	4 (17%)	1 (4%)	**3.83**
e. Child intrinsic satisfaction.	1 (4%)	2 (9%)	4 (17%)	6 (26%)	6 (26%)	3 (13%)	1 (4%)	**3.74**
f. Initial and ongoing assessment.	--	--	11 (48%)	7 (30%)	3 (13%)	1 (4%)	1 (4%)	**3.62**
g. Incorporating symbolizing and notating.	1 (4%)	2 (9%)	3 (13%)	4 (17%)	3 (13%)	9 (39%)	1 (4%)	**3.46**
h. Engender more sophisticated strategies.	--	2 (9%)	10 (44%)	6 (26%)	1 (4%)	3 (13%)	1 (4%)	**3.32**
i. Teaching just beyond the cutting edge (ZPD).	--	2 (9%)	2 (9%)	1 (4%)	1 (4%)	15 (65%)	2 (9%)	**3.17**

Appendix 2:
Supporting the Implementation of Math Recovery®
Professional Development

A Michigan Mathematics and Science Partnership (MSP) Grant
The Muskegon Area ISD Regional Mathematics and Science Center

Cohort 1 Teacher Participant End-of-Program Survey

Project Objectives
Teacher Perceptions
Workshop Arrangements

Prepared by External Evaluation Team
Science and Mathematics Program Improvement (SAMPI)
Western Michigan University

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October 2015

Cohort 1 teacher participants completed an end-of-program-program survey as part of the evaluation of *Supporting the Implementation of Math Recovery ® Professional Development*. The post-survey was administered on the final day of AVMR Course 2 at each of the four sites.

The surveys contained items that were rated on a scale of 1-5 related to: 1) teachers' perceptions of the value and accomplishment of each of the project objectives, 2) teacher's perceptions of several statements before they began AVMR Course 1 (pre) versus after completing AVMR Course 2 (post), and 3) teachers' satisfaction with workshop arrangements. T-tests were used to analyze pre/post improvements at each of the four sites:

- CAL = Calhoun Intermediate School District
- EUP = Eastern UP Math and Science Center
- MAS = Mason-Lake Oceana Math and Science Center
- MUS = Muskegon Area ISD Regional Math and Science Center

Data for each item is found below:

PROJECT OBJECTIVES. Cohort 1 teachers rated the five major project objectives according to (1) their perception of the VALUE of the objectives and (2) the degree to which they think the objectives were ACCOMPLISHED. **A "1" on the scale represents the lowest value; a "5" represents the highest value.** V = Value; A = Accomplish. They were also asked to make comments.

P-values that indicate a significant difference are highlighted (*). In all cases, "Accomplished" rating was lower than "Value" rating, indicating teachers felt objectives were not accomplished as strongly as they would have liked.

	n	Mean		Diff	SD	p-value
		V	A			
CAL	24	4.29	3.79	-0.50	1.18	0.049*
EUP	16	4.88	4.38	-0.50	0.63	0.006*
MAS	29	4.76	4.38	-0.38	0.68	0.005*
MUS	22	4.77	4.45	-0.32	0.72	0.050*

Deepen teacher understanding of mathematics content knowledge

	n	Mean		Diff	SD	p-value
		V	A			
CAL	23	4.52	4.09	-0.44	0.84	0.022*
EUP	16	4.81	4.50	-0.31	0.48	0.020*
MAS	29	4.72	4.45	-0.28	0.59	0.018*
MUS	22	4.77	4.23	-0.55	0.80	0.004*

Deepen teacher understanding of the continuum of mathematical thinking

Comments for "Deepen teacher understanding of mathematics content knowledge":
- **Calhoun:** This has been wonderful! Long overdue!" and "Come a long way from the beginning! Nothing against my instructor – I'm not willing to assume that I'm awesome yet – I just need more experience."
- **Mason:** "Great information," "Excellent information on where kids should be and when," "There is always more to learn," "I just need more practice to move to a 5," and "Still need time with students to gain experience and mastery of knowledge."
- **Muskegon:** "I need to continue to develop my understanding. It comes with practice and time," "A lot of information," and "Really helped me see the progression of how to teach math."

Comments for "Deepen teacher understanding of the continuum of mathematical thinking":
- **EUP:** "I got a lot of information from this and I felt it opened my eyes to math instruction. I'm excited to use it in my classroom," "Lots of new concepts that make sense," and "I only gave 4s in these because I feel it is my part to take it to a 5."
- **Mason:** "Especially in regard to place value," "Wow – the constructs have really changed my viewpoint of math learning," "I'm not quite sure I understand what this question is asking," and "Once again a summer class limits immediate use of knowledge – need time."
- **Muskegon:** "Continuum is so important and lets us know order and expectations," "At some point it can be too much in a short amount of time," and "All about the student thinking and strategies."

	n	Mean		Diff	SD	p-value
		V	A			
CAL	23	4.52	4.00	-0.52	0.79	0.004*
EUP	16	4.88	4.38	-0.50	0.73	0.015*
MAS	29	4.83	4.28	-0.55	0.63	< 0.001*
MUS	22	4.73	4.41	-0.32	0.78	0.069

Deepen teacher understanding of assessment tasks and instruction to move students forward along the continuum of mathematical thinking

	n	Mean		Diff	SD	p-value
		V	A			
CAL	23	4.39	3.91	-0.48	0.99	0.031*
EUP	16	4.50	4.19	-0.31	0.48	0.020*
MAS	29	4.72	4.38	-0.35	0.77	0.023*
MUS	22	4.73	4.14	-0.59	0.85	0.004*

Teachers have access to on-demand support to implement Math Recovery® assessment and instruction practices

Comments for "Deepen teacher understanding of assessment tasks and instruction to move students forward along the continuum of mathematical thinking":
- **Calhoun:** "I'm a hands-on learner. I think I will learn even more when I actually start using the diagnostics more consistently," and "Just being familiar and getting hands-on experience will increase this."
- **Mason:** "I still need more work," "I understand the process for reaching students mathematically but will require time to perfect the process," "Need practice over time – more practice with evaluating," "Great

assessment tools," "I am glad to have use of the assessments," "Again – just more practice," "Practice needed," and "This is my first time doing this. It will take time to get a hold of how to put it into action."

- **Muskegon:** "I liked that we practiced assessment tasks with kids and not other adults," "This will need to be continuous. Brain only remembers so much at a time," and "Able to see exactly what students needed before moving them forward."

Comments for "Teachers have access to on-demand support to implement Math Recovery® assessment and instruction practices":

- **Calhoun:** "Haven't been in school to assess yet or teach," and "Creating the 'What to do to move a kid from a 2 to a 3' documents. Important to do my own work on this. Also would be nice if it were already done. Also red and purple books are difficult to read. Wordy/much jargon. Is that necessary?"
- **Mason:** "I just need to be able to put more energy into this," "I have a high level of meaningful support at our district's ESD," "[The facilitator] is great! Wish more teachers in my district took this course – she is readily available to help," "Only due to lack of time," "Need to access the website to find resources – trouble navigating site yet," "[The facilitator] always responds to questions and provides support in a timely manner!" and "Having [the facilitator] around and being able to have her on site if needed is awesome."
- **Muskegon:** "I have support as of today's date," "I have support during the training, but during school year, I don't know," "Would probably be different per building," and "Never used it before."

Reduce the amount of kids needing mathematics intervention

	n	Mean		Diff	SD	p-value
		V	A			
CAL	15	4.20	3.60	-0.60	0.99	0.033*
EUP	14	4.50	4.29	-0.21	0.43	0.082
MAS	27	4.70	3.52	-1.19	1.50	< 0.001*
MUS	21	4.67	4.19	-0.48	0.81	0.014*

Comments for "Reduce the amount of kids needing mathematics intervention":

- **Calhoun:** "TBD," "Not yet assessed," and "To be determined."
- **EUP:** "This will happen."
- **Mason:** "Need time to get things in action to start seeing a drop in numbers needing support," "We need to get more instructors on board so that more students are making a better progression through mathematics," "The strategies to reach students as well as my understanding of their underlying concepts has been improved through this course," "Since only a few from our school have been trained, this instruction and understanding will be spotty," "This will depend on how successful I am at using the assessments and then designing activities to help," "We have not yet begun our school year. There is no data to measure," "It is too early to tell if that was accomplished," "Not implemented yet – need to see data first," "Work in progress," "Need implementation time for it to work," and "Hopefully I will see data at end of year (and throughout) to attest to this."
- **Muskegon:** "In 3rd grade," "I still would value hearing more about how assessments should be used with a classroom setting. Everyone or just those suspected to be in need?" "Would be awesome," "Hopefully this will," "?" and "I have not witnessed this yet, but I can see it happening."

TEACHER PERCEPTIONS. Cohort 1 teacher participants rated several statements in terms of their perception before attending AVMR Course 1 (pre) and after attending AVMR Course 2 (post). **A "1" on the scale represents the lowest value; a "5" represents the highest value.**

P-values that indicate a significant difference are highlighted (*). Statistically significant pre-to-post improvements were observed for all items at all sites, except "How familiar are you with the new Common Core standards for mathematics?" for Mason teachers.

How would you rate your knowledge of how children make sense of early mathematics?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	24	2.50	4.13	1.63	1.01	< 0.001*
EUP	16	2.56	4.25	1.69	0.60	< 0.001*
MAS	29	2.45	4.41	1.97	0.68	< 0.001*
MUS	22	2.41	4.05	1.64	1.00	< 0.001*

How would you rate your knowledge of how children make sense of early multiplication/division development?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	24	2.54	4.00	1.49	1.32	< 0.001*
EUP	16	2.50	4.19	1.69	0.70	< 0.001*
MAS	29	2.10	4.10	2.00	1.00	< 0.001*
MUS	22	2.50	4.00	1.50	0.80	< 0.001*

How would you rate your knowledge of how children make sense of early place value development?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	24	2.38	4.00	1.63	1.14	< 0.001*
EUP	15	2.60	4.27	1.67	0.49	< 0.001*
MAS	29	2.17	4.31	2.14	0.83	< 0.001*
MUS	22	2.32	4.14	1.82	0.73	< 0.001*

How secure are you in using questioning techniques to gain insight into student understanding of math concepts?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	24	2.63	4.00	1.38	0.77	< 0.001*
EUP	16	2.19	3.94	1.75	1.07	< 0.001*
MAS	29	2.07	4.00	1.93	0.75	< 0.001*
MUS	22	2.82	4.18	1.36	0.95	< 0.001*

How well do your current mathematics assessments inform you of your students' mathematical understanding?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	24	2.71	4.04	1.33	1.13	< 0.001*
EUP	16	2.19	4.19	2.00	1.16	< 0.001*
MAS	29	2.14	3.86	1.72	1.91	< 0.001*
MUS	20	2.00	3.65	1.65	1.27	< 0.001*

How well do your current materials help guide you in differentiating instruction for your students?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	23	2.83	4.13	1.30	1.06	< 0.001*
EUP	16	2.44	4.06	1.63	1.09	< 0.001*
MAS	29	2.66	3.90	1.24	1.57	< 0.001*
MUS	22	2.32	3.64	1.32	1.09	< 0.001*

How familiar are you with the new Common Core standards for mathematics?

	n	Mean		Diff	SD	p-value
		Pre	Post			
CAL	24	3.17	3.54	0.38	1.01	0.083
EUP	16	3.69	4.19	0.50	0.82	0.027*
MAS	29	3.31	4.07	0.76	0.58	< 0.001*
MUS	22	3.45	3.82	0.36	0.58	0.008*

WORKSHOP ARRANGEMENTS. Teachers were asked to rate several statements about workshop arrangements on a scale of 1-5, with **1 = Disagree and 5 = Agree.**

Workshop facilities were satisfactory

	n	Mean	SD
CAL	24	4.83	0.38
EUP	16	4.31	0.95
MAS	29	4.97	0.19
MUS	22	4.92	0.29

The information about the workshop (e.g., schedule, expectations, etc.) was communicated well

	n	Mean	SD
CAL	24	4.92	0.28
EUP	16	4.31	0.87
MAS	29	4.93	0.26
MUS	22	4.77	0.43

Comments for "Workshop facilities were satisfactory":
- **Calhoun:** "Valley View was hot."
- **Mason:** "[The facilitator] was amazing!" and "I had two different facilitators. [The first one] seemed more organized and I was understanding her delivery better. [The second one] was nice but went a bit too fast and wasn't as good at explaining things as [the first one] was (for me)."
- **EUP:** "Some were tight squeezes. Also hearing was hard," "Monday-Thursday, too cold/hard chairs," and "Temperature – hot or cold."

Comment for "The information about the workshop (e.g., schedule, expectations, etc.) was communicated well":
- **EUP:** "I didn't know what I was in for."
- **Mason:** "Some confusion on days we were to assess students."

Workshop facilitators were effective in communicating ideas and issues

	n	Mean	SD
CAL	24	4.92	0.28
EUP	16	4.56	0.89
MAS	28	4.86	0.36
MUS	22	4.86	0.35

Workshop facilitators were effective in organizing sessions so that I was actively involved

	n	Mean	SD
CAL	24	4.92	0.28
EUP	16	4.56	0.89
MAS	28	4.86	0.36
MUS	22	4.86	0.35

Comment for "Workshop facilitators were effective in communicating ideas and issues":
- **EUP:** "In Course 1, it was extra great."
- **Mason:** "[The facilitator for Course 1] did a great job!" "[The facilitator for course 1]," "Our Course 2 facilitator was not as engaging as Course 1," "I especially loved [the Course 1 facilitator]. She was very helpful!" "[The Course 1 facilitator] was a 5, week two was a 3."

Comment for "Workshop facilitators were effective in organizing sessions so that I was actively involved":
- **Mason:** "[The facilitator for Course 1]," "Our Course 2 facilitator was not as engaging as Course 1."

A collaborative and helpful tone was established during the session

	n	Mean	SD
CAL	24	5.00	0.00
EUP	16	4.69	0.60
MAS	29	5.00	0.00
MUS	22	4.95	0.21

Comment for "A collaborative and helpful tone was established during the session":
- **EUP:** "I really feel like I learned a lot from people from other districts."
- **Mason:** "Available and willing to answer all questions and clarify until it is understood."