

Kentucky Center for Mathematics

2008-2009 Mathematics Coaching Program
Evaluation

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Prepared for

The Kentucky Center for Mathematics

Kentucky Center for Mathematics: 2008-2009 Mathematics Coaching Program Evaluation

Summary of Results

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The Kentucky Center for Mathematics: 2008-2009 Mathematics Coaching Program Evaluation

The Kentucky Center for Mathematics (<http://kentuckymathematics.org>, henceforth “KCM”) was formed, through an appropriation given to Northern Kentucky University from the Council on Postsecondary Education (CPE), with the goal of enhancing the teaching of mathematics at grades K-12 in order to maximize student learning of mathematics within the Commonwealth of Kentucky. This report summarizes the portion of the evaluation of the KCM’s Mathematics Coaching Program for which the University of Cincinnati Evaluation Services Center (UCESC) was responsible.

The KCM Mathematics Coaching Program serves to train coaches to assist their peers (henceforth “coachees”) in taking instructional ideas and translating them into actions that improve student learning. Coaches are trained to guide coachees to become more self-directed in the decisions they make regarding instructional methods, classroom management, assessment, and other aspect of their classroom responsibilities. Coaches may work with mathematics teachers both individually and in small groups and may work within single schools or within a school district. The KCM supports mathematics coaches by providing high-quality training and sustained support to develop a coach’s identity as a mediator of thinking for individuals and for groups; to increase the coach’s capacity to effectively balance the roles of coach, consultant, and collaborator; and to expand a coach’s facilitative skills and leadership abilities in order to support change within the coach’s schools and/or districts.

The KCM collaborated with three training programs to provide professional development. The coaching model adopted in Kentucky for mathematics coaches was Cognitive CoachingSM. The vendor is The Center for Cognitive CoachingSM (www.cognitivecoaching.com). The Coaching Classroom Management training was conducted by The Center for Research on Learning (www.instructionalcoach.org). A third vendor, Edvantia, provided a course called Questioning and Understanding to Improve Learning and Thinking – QUILT (www.edvantia.com).

The UCESC served as one of the external evaluators to the KCM Mathematics Coaching Program. Dr. Debbie Zorn, the director of UCESC, provided general oversight of the evaluation. Dr. Karen Ludwig, Dr. Cathy Maltbie, and Dr. Jerry Jordan, Evaluation Associates at UCESC, served as the primary evaluators. Jeffrey Marks, MEd, UCESC Evaluation Consultant, and Audra Morrison, UCESC Executive Staff Assistant, provided other support.

Purpose of the Evaluation

The purpose of this evaluation was to assess the general effectiveness of the Mathematics Coaching Program as implemented in Kentucky schools by the KCM during the 2008-2009 school year. Components of this evaluation examine the perceived effectiveness by coaches, coachees and school administrators of the training and support offered by the KCM, coaches' and coachees' changing attitudes towards mathematics, and, finally, the availability of resources for schools, teachers, and students who participated in these programs.

Evaluation Questions

The evaluation activities performed by UCESC provided a general assessment of the KCM's Mathematics Coaching Program activities in service of mathematics education in Kentucky. The evaluation was guided by the following questions¹:

- To what extent does the KCM provide the training, materials and support to coaches that enhance the coaches' ability to effectively coach other teachers? Support includes that which comes directly from the KCM, specifically the...
 - Effectiveness of trainings, regional coordinators, CENTRA meetings, and KCM staff contacts.
 - Support outside the direct control of the KCM includes school administrators, district personnel, and other teacher in the coach's school/district.
- To what extent does the KCM create an environment that is conducive to building mathematics capacity? Specifically...
 - Positive attitudes about teaching and learning mathematics
 - The perception of increased mathematics knowledge, knowledge of Kentucky Core Content, assessments, and the like.
 - Attitudes of coaches, coachees, and administrators regarding perceived values of the coaching program in their school/district.

¹ In fall 2008 it was decided by KCM, based on advice from Kentucky's Committee for Mathematics Achievement, not to administer the Learning for Mathematics Test to coaches and coachees. This test served, in past years, to measure content and pedagogical content knowledge. Therefore, the third evaluation question from previous evaluations, "To what extent does the KCM through its Coaching Program expand teachers' mathematical content knowledge, pedagogical skills, and knowledge?" was not assessed.

Evaluation Design

The evaluation employed a longitudinal pretest/posttest approach whenever possible. No new mathematics coaches were added to the program for the 2008-2009 school year; therefore no pre-tests were given. The teachers participating in the Mathematics Coaching Program completed all pre-test surveys during the summer of their first year of involvement (2006-2007 or 2007-2008) and were subsequently tested each spring. Although the participants completed surveys after most training sessions, these were formative in nature and are not included in this summative report.

Evaluation Procedures

Participants

A total of 114 mathematics coaches (teachers who provided coaching services), 991 coachees (teachers who received coaching services) from grades K-12, and 44 school or district administrators provided data specifically for this evaluation between June 2006 and June 2009. All participants listed above voluntarily participated in the various evaluation activities.

The number of participants in Year 3 was small. However, because the Mathematics Coaching Program is a 2-year commitment and new coaching applications were not accepted for the 2008-9 school year, this was expected. There were 11 senior coaches (started the program in summer 2006) and 21 sophomore coaches (started the program in summer 2007) during the 2008-9 school year. In most cases response rates were 70% or higher for the surveys.

Instruments

Five data collection instruments were employed in this evaluation. Each is briefly described below.

The Mathematics Beliefs and Attitudes Survey (MBS). The MBS was developed by researchers at Northern Kentucky University. It presents items designed to assess *teacher efficacy* (the teachers' own perceptions of their ability to teach effectively), *beliefs about learning mathematics* (beliefs about how students best progress in their knowledge and skills in mathematics) and *beliefs about the nature of mathematics* (the teachers' beliefs about the fundamental characteristics of mathematics). All coaches and coachees were asked to complete this survey. The instrument can be viewed in Appendix A.

Coach Overall Evaluation Survey (OES). The KCM administered training to its coaches at several points during the year. An Overall Evaluation Survey was developed by the UCESC team for participants to rate how training affected their ability to perform their duties as coaches in their school or district as well as to assess their perception of increased

knowledge of Kentucky Core Content, mathematics in general, etc. The basic structure of this instrument was essentially the same across applications with specific content questions adapted to the trainings. The instrument can be viewed in Appendix A.

QUILT Survey (QS). This survey was developed to assess the training that coaches received subsequent to the fall of 2007 entitled *Questioning and Understanding to Improve Learning and Thinking*. It focuses on the perceived usefulness of the information presented as well as how the training benefited the participant in their role as coach. The instrument can be viewed in Appendix A.

Coachee Evaluation Survey (CES). The purpose of this survey was to ascertain the benefits and challenges of the Mathematics Coaching Program to mathematics teachers who were being coached. It also explores issues related to usage, implementation, and resources. The instrument can be viewed in Appendix A.

Coach Administrators Survey (CAS). This survey was developed by UCESC to ascertain the degree to which administrators and principals were satisfied with the program, to gain information about program implementation, to discover the experienced benefits and challenges of the program, and to determine what additional resources were needed to increase the success of the program. The instrument can be viewed in Appendix A.

Data Collection

Since data is analyzed longitudinally, a summary of the data collection over the entire period is given below. Instruments were discussed in previous reports.

Coaches, 2006-7 School Year. Training of Cohort 1 mathematics coaches began in June 2006. Identical training sessions were held in two different locations. One occurred June 6 - 16, 2006, at the Academy Center for Educational Services in Newport, Kentucky, and the other took place July 17 - 28, 2006, at the Western Kentucky University L.D. Brown Agricultural Exposition Center in Bowling Green, Kentucky. For the June session, the MBS was administered in pencil and paper format by the KCM before training began on June 6. For the July session, the MBS was again administered in pencil and paper format by the KCM before training began on July 17. The summer OES was administered as a general assessment on the last day of both sessions (June 16 and July 28, 2006, respectively). Data were entered and analyzed by UCESC.

Coaches' attitudes were assessed again in spring 2007. During the week of April 16, 2007, coaches received an email invitation to complete the electronic version of the MBS. A final administration of the OES was given via email on May 10, 2007. Data were downloaded and analyzed by UCESC.

Coachees, 2006-7 School Year. In fall 2006, all coachees² were surveyed at their home school buildings. These coachees completed the MBS, in pencil and paper format, to assess their attitudes towards teaching mathematics. Surveys were mailed in packets from the KCM to the coaches for distribution to the coachees. Surveys were returned to the KCM and forwarded to UCESC for data entry and analyses.

² These coachees were first coached by Cohort 1 coaches in the 2006-7 school year.

MBS follow-ups were administered electronically at the end of the 2006-2007 school year. Email invitations were sent to coachees via their coaches during the week of April 16, 2007. UCESC was responsible for downloading all data and for analyses.

Coaches, 2007-8 School Year. The training of Cohort 2 mathematics coaches began in summer 2007. Again, two identical training sessions were offered in two different locations. One session was held June 18 - 26, 2007, at Eastern Kentucky University in Richmond, Kentucky; the other was held July 23 - 31, 2007, at Western Kentucky University in Bowling Green, Kentucky. For the June session, the MBS was administered electronically, via email invitation, by the KCM before training began on June 18. For the July session, the MBS was again administered electronically, via email invitation, by the KCM before training began on July 23. The summer OES was administered in pencil and paper format by the KCM on the last day of both sessions, June 26 and July 31, 2007 respectively. Data were entered and analyzed by UCESC.

Spring 2008 surveys were administered at the end of the school year for both Cohort 1 and Cohort 2 and did not coincide with any training. All tests and surveys were administered electronically and included the MBS and the OES. For both the MBS and OES email invitations were sent to coaches by the KCM on May 7, 2008. Fielding for all surveys was closed on May 30, 2008. UCESC was responsible for downloading and data analyses.

Coachees, 2007-8 School Year. The MBS was administered electronically to Cohort 2³ coachees in fall 2007. The survey internet link was sent by the KCM to a designated administrator within the school district. These administrators were responsible for sending the link to coachees and requesting that they complete the survey. Fielding for the MBS began September 24, 2007, and ended October 12, 2007. UCESC was responsible for downloading all data and for analyses.

Spring 2008 MBS were administered electronically at the end of the school year for both Cohort 1 and Cohort 2 coachees. The MBS and OES internet links were again sent to a designated administrator within the school district by the KCM. These administrators were responsible for sending the links to coachees and requesting that they complete the test/surveys. Fielding for the MBS began May 7, 2008, and ended May 30, 2008. UCESC was responsible for downloading all data and for analyses.

Coach Administrators, 2007-8 School Year. The CAS was fielded by UCESC on May 7, 2008, and ended on July 6, 2008. An email was sent to all administrators and followed up with phone calls as needed; this group consisted mainly of administrators at the district level. This instrument was originally designed as a telephone survey. Because of scheduling difficulties and numerous requests from respondents it was also offered as an internet survey. Eleven administrators were interviewed via telephone and 32 elected to take the survey online. An analysis of results indicates that there were no significant differences in responses due to survey method. Data were entered and analyzed by UCESC.

Coaches, 2008-9 School Year. The KCM did not accept new coaches for the 2008-2009 school year. The QUILT survey was given to sophomore coaches (Cohort 2) via pencil

³ These are coachees of either Cohort 1 or Cohort 2 coaches who first began being coached in the 2007-8 school year.

and paper after training on October 10, 2008, December 4, 2008, and February 5, 2009. QUILT Surveys were forwarded to UCESC for data entry and analyses.

Spring 2009 surveys were administered at the end of the school year for both Cohort 1 and Cohort 2 and did not coincide with any training. All surveys were administered electronically and included the MBS and the OES. For the MBS, email invitations were sent to coaches by the KCM on April 27, 2009. Fielding for the OES surveys began May 11, 2009. Fielding for both surveys ended June 30, 2009. UCESC was responsible for downloading all data and for basic descriptive analyses.

Coachees, 2008-9 School Year. Although there are Cohort 3 coachees,⁴ the KCM elected not to administer a pre-MBS to this group; therefore no data collection occurred in fall 2008. Spring 2009 surveys were administered at the end of the school year for Cohort 1, Cohort 2, and Cohort 3 coachees. All surveys were administered electronically and included the MBS and the CES. For the MBS and the CES, survey internet links were sent to a designated administrator within the school district by the KCM. These administrators were responsible for sending the links to coachees and requesting that they complete the surveys. Fielding for the MBS began on April 30, 2009, and for the CES on May 11, 2009. Fielding was completed June 30, 2009. UCESC was responsible for downloading all data and for analyses.

Coach Administrators, 2008-9 School Year. This group consisted mainly of administrators at the district level. The CAS was fielded by UCESC on May 11, 2009. Two reminders were sent for the survey on June 9, 2009, and June 16, 2009. Fielding was closed on June 30, 2009, with 23 administrators responding. UCESC was responsible for downloading all data and for analyses.

Data Analysis

This evaluation employed a number of analysis strategies to summarize the data collected. The Math Beliefs Survey (MBS) and the Overall Evaluation Survey (OES) used mostly closed-ended items at multiple time points (pre-Institute, post-Institute, and/or follow-ups) to assess teachers' perceptions of the nature of mathematics, learning mathematics, self-efficacy regarding personal learning and abilities in mathematics, and program quality. Frequencies and mean scores were used to compare these beliefs across the three-year-long evaluation period. Some caution should be applied to the interpretation of some statistical tests because of the small number of participating coaches and coachees, the number who were able to complete all surveys, and the forms of data collected (mainly nominal and ordinal).

Frequencies and mean scores for the QUILT Survey, the OES, and the CAS are presented where applicable. These data are presented at multiple time points where available. Again, caution should be applied to any interpretation or conclusions that are drawn because of the number of respondents. UCESC was responsible for downloading all data and for analyses.

⁴ These are coachees of either Cohort 1 or Cohort 2 coaches who first began being coached in the 2008-9 school year.

The KCM Mathematics Coaching 2008-2009 Program Results

One of the activities of the Kentucky Center for Mathematics has been the creation and ongoing support of a statewide Mathematics Coaching Program. The Mathematics Coaching Program is designed to develop coaches who work with mathematics teachers both individually and in small groups to help teachers plan and reflect upon their work in order to enhance both their performance in the classroom as well as student learning of mathematics. Coaches may work within single schools or within a school district. The implementation of the Mathematics Coaching Programs was site-specific; that is, the selection of coaches and decisions about which teachers would be coached were left to school or district personnel.

Coaches and coachees were both assessed longitudinally (see *Data Collection* above) regarding beliefs and attitudes towards mathematics. These results are reported below.

Coaches' Beliefs and Attitudes⁵

The MBS was used to assess the coaches' beliefs and attitudes about mathematics. Cohort 1 coaches were surveyed in June or July 2006 at their initial training (pretest) and again in spring 2007, spring 2008, and spring 2009 if they continued in the program. Cohort 2 coaches were surveyed in summer 2007 at their initial training (pre-test) and again in spring 2008 and spring 2009. Due to the small number of coaches continuing in the program over the last three years, only five Cohort 1 and ten Cohort 2 coaches took the MBS at all administrations, results are not analyzed by grade level. Only coaches who took the test at all data time points will be included in the longitudinal analyses; however, results from the spring 2009 survey will be reported for all respondents who took the survey.

MBS Results for Coaches. Due to the small number of coaches who took the MBS at all time points (Cohort 1 = 5, Cohort 2 = 10), no tests of significance were conducted. Question items with a change in the mean score of greater than 0.5 from pre-test to follow-up test(s) are displayed in the following tables. While small sample sizes make significance testing inappropriate, the noted attitude shifts are viewed as items of interest.

Cohort 1 coaches showed no notable changes during the 2006-9 academic years regarding *learning mathematics*. Table 1 displays two belief items regarding *teacher mathematics efficacy* in which Cohort 1 coaches (n=5) showed changes in the desired direction over the three years of data collection. After 3 years of training, all coaches agreed or strongly agreed that they were able to remember most of the mathematics they learned in a course after the course was over and no coaches agreed or strongly agreed that if they could not solve a mathematics problem within a few minutes, they would stop trying to solve it.

Table 2 shows that three beliefs regarding *the nature of math* moved in the desired direction. These included, "To understand mathematics, students must solve many problems following examples provided;" "Doing mathematics consists mainly of using rules;" and "Most mathematics problems are best solved by deciding on the type of problem and then

⁵ Complete displays of the data for the MBS are included in Appendix B.

using a previously learned solution for that type of problem.” No coaches agreed or strongly agreed with any of these statements. These items could suggest that the coaches are beginning to make content connections between mathematical strands and that this understanding provides multiple pathways to a solution. However, due to the small number of Cohort 1 responses (n=5) over the three time periods, any conclusions must be viewed cautiously. Results for Cohort 2 coaches (n=10) were similar (see Tables 3 and 4).

Looking specifically at the spring 2009 data, there were few differences between Cohort 1 and Cohort 2. Coaches showed no notable differences regarding beliefs about *learning mathematics*. Two questions did show potential differences. Looking at beliefs about *teaching mathematics* efficacy (Table 5), Cohort 2 strongly agreed or agreed (14.3%) at higher levels that, “Often in mathematics, I do not understand the concept behind a problem,” than did Cohort 1 (0.0%). Regarding the *nature of mathematics*, Cohort 1 strongly agreed or agreed (20.0%) that, “In order to learn mathematics you need to learn a different method for each new type of problem,” while in Cohort 2 only 7.1 percent reported agreement. Again, small counts (Cohort 1 = 10, Cohort 2 = 14) require that caution be taken when applying meaning to any noted differences.

Overall, the beliefs and attitudes that coaches report regarding the nature and learning of mathematics, and mathematics efficacy are high and offer the potential to support the development of mathematics capacity in their schools and districts. Further study with increased numbers of coaches and their coaches would strengthen this conclusion.

Table 1: Coaches, Cohort 1, Math Beliefs Survey, Teaching Mathematics Efficacy

(Coaches who took the Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2006			Spring 2007			Spring 2008			Spring 2009		
	Percent Agree or Strongly Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	80.00	4.00 (1.22)	5	80.00	3.40 (1.34)	5	80.00	4.20 (.84)	5	100.00	4.60 (.55)	5
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	20.00	2.80 (1.10)	5	20.00	2.20 (1.10)	5	20.00	2.25 (1.26)	5	.00	1.60 (.55)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 2: Coaches, Cohort 1, Math Beliefs Survey, Nature of Mathematics

(Coaches who took the Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2006			Spring 2007			Spring 2008			Spring 2009		
	Percent Agree or Strongly Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	60.00	4.00 (1.41)	5	20.00	2.80 (.84)	5	20.00	2.60 (.89)	5	.00	2.20 (.45)	5
Q22. Doing mathematics consists mainly of using rules.	40.00	3.00 (1.00)	5	.00	2.00 (.00)	5	.00	2.00 (.00)	5	.00	1.80 (.45)	5
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	60.00	3.80 (.84)	5	20.00	2.80 (.84)	5	40.00	2.80 (1.10)	5	.00	2.40 (.55)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 3: Coaches, Cohort 2, Math Beliefs Survey, Teaching Mathematics Efficacy

(Coaches who took the Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2007			Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	90.00	3.78 (.67)	10	80.00	3.80 (.79)	10	100.00	4.30 (.48)	10
Q3. I get frustrated if I don't understand what I am studying in mathematics.	40.00	3.00 (1.32)	10	30.00	2.70 (.95)	10	70.00	3.60 (.70)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 4: Coaches, Cohort 2, Math Beliefs Survey, Nature of Mathematics

(Coaches who took the Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2007			Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	20.00	2.89 (.78)	10	20.00	2.50 (.85)	10	.00	1.90 (.57)	10
Q22. Doing mathematics consists mainly of using rules.	50.00	3.33 (1.22)	10	20.00	2.70 (.82)	10	10.00	2.10 (.88)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 5: Coaches, Cohorts 1-2, Math Beliefs Survey, Teaching Mathematics Efficacy

(All coaches who took the Spring 2009 surveys)

	Cohort 1			Cohort 2		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	.0	1.30 (.483)	10	14.3	2.07 (1.141)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 6: Coaches, Cohorts 1-2, Math Beliefs Survey, Learning Mathematics

(All coaches who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	20.0	2.40 (1.265)	10	7.1	1.86 (.770)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Coachees' Beliefs and Attitudes⁶

Cohort 1 coachees also completed the MBS as a part of a longitudinal design. The pretests were administered early in fall 2006 and the posttests were administered in spring 2007, spring 2008, and spring 2009. Cohort 2 coachees were administered the MBS in fall 2007, spring 2008, and spring 2009. Cohort 3 took only the spring 2009 survey. In this section results will be discussed for coachees that completed all possible surveys. Full results are in Appendix B. For consistency, results for the MBS will be discussed for all coachees by cohort for only the spring 2009 data.

MBS Results for Coachees. Due to the small number of coachees responding to all data points for Cohort 1 (n=11), as well as for consistency, no tests for significances were conducted. Items where the mean changed by more than 0.5 are displayed; however, this does not imply significance, only items that can potentially be investigated further in Year 4.

Cohort 1 coachees showed change on several items of the MBS. In the area of *teaching mathematics efficacy*, agreement with the statement, "If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it," decreased over the three years of the program. This could indicate that coachees are becoming more comfortable with the content area and are realizing that mathematics is not a series of short-answer questions. In the area of *learning mathematics*, a decrease in agreement with the statement, "Learning mathematics mainly involves memorizing procedures," might indicate Cohort 1 coachees were becoming more open to the belief that mathematics is richer than isolated skills and processes. Results are shown in Tables 7 and 8.

Cohort 2 (n=23) coachees showed no differences across administrations of the MBS, which was also the case during the 2007-2008 comparisons.

Tables 9 and 10 compare Cohorts 1-3 coachees' responses on the spring 2009 MBS. Only one question in the *teaching mathematics efficacy* battery showed a notable difference. Cohort 3 coachees strongly agreed or agreed at a higher percentage with the statement, "I am able to remember most of the mathematics I learn in a course after the course is over," than did Cohorts 1 and 2. Two questions in the area of *learning mathematics* showed differences. These questions are, "In order to learn mathematics you need to learn a different method for each new type of problem," and "I know I understand mathematics when I get a good grade on an exam." For both, Cohort 3 strongly agreed or agreed at higher levels than did the other cohorts. There were no notable differences in the *nature of mathematics* questions.

The beliefs and attitudes that coachees report regarding the nature and learning of mathematics, and mathematics efficacy are high. Although they are overall slightly lower than that of the coaches this still will serve to facilitate the development of mathematics capacity in these schools and districts. Once again, continued study of these beliefs and attitudes would strengthen this conclusion.

⁶ Complete displays of the data for the MBS are included in Appendix B.

Table 7: Coachees, Cohort 1, Math Beliefs Survey, Teaching Mathematics Efficacy

(Coachees who took the Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2006			Spring 2007			Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	45.45	2.82 (1.40)	11	27.27	2.55 (1.51)	11	45.45	2.91 (1.38)	11	18.18	2.27 (1.01)	11

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 8: Coachees, Cohort 1, Math Beliefs Survey, Learning Mathematics

(Coachees who took the Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2006			Spring 2007			Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q11. Learning mathematics mainly involves memorizing procedures.	9.09	2.55 (.69)	11	45.45	3.09 (.94)	11	9.09	2.09 (.83)	11	.00	2.00 (.67)	11

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 9: Coachees, Cohorts 1-3, Math Beliefs Survey, Teaching Mathematics Efficacy

(All coachees who took the Spring 2009 surveys)

	Cohort 1			Cohort 2			Cohort 3		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	66.7	3.52 (1.372)	33	71.7	3.62 (1.180)	60	80.8	4.04 (1.076)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 10: Coachees, Cohorts 1-3, Math Beliefs Survey, Learning Mathematics

(All coachees who took the Spring 2009 surveys)

	Cohort 1			Cohort 2			Cohort 3		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	6.1	2.21 (.781)	33	18.6	2.41 (1.100)	59	23.1	2.73 (1.116)	26
Q17. I know I understand mathematics when I get a good grade on an exam.	44.1	3.12 (.977)	34	55.0	3.48 (.965)	60	65.4	3.65 (.797)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Coaches' Overall Evaluation Survey

All coaches were asked to complete an annual Overall Evaluation Survey (OES). This survey was designed to assess the coaches' general perceptions of the effects of participating in the Mathematics Coaching Program, the KCM resources and staff, and the support they received from their school or district. This survey was administered in summer 2006 and spring 2007. A slightly revised version was administered in spring 2008 and a third revision was given in spring 2009. A complete report of all responses for all common items is included in Appendix C. Here, data are reported by cohort.

Coaches' Perceptions of the Program. Table 11 shows the response data from the OES for the first cohort of school coaches from spring 2007, spring 2008 and spring 2009. Due to coaches leaving the program,⁷ only 8 responses were collected for 2009. Their responses indicated that their feelings of being prepared to coach remain high as a group. Agreement on five of the ten questions increased over the period. Overall, agreement levels in 2008 were lower than for the other two years. This dip in perceived preparedness after the second year could be an indication that coaches began to realize what they did not know and as they gained experience and confidence, this perception of preparedness returned to its original value the next year.

⁷ The Coaching Program is designed to be a two-year commitment, so it is not unexpected that coaches would not remain for a third year.

Table 11: Coaches' Overall Evaluation Survey, 2006-9, Cohort 1

	Pct Strongly Agree or Agree		
	Spring 2007 (N=36)	Spring 2008 (N=25)	Spring 2009 (N=8)
I have a greater understanding of how children learn mathematics.	80.56	96.00	87.50
This training has increased my knowledge of effective instructional strategies for teaching mathematics.	91.67	68.00	87.50
I have increased my mathematical content knowledge.	83.33	72.00	87.50
I have greater knowledge of the Kentucky Core Content.	77.78	76.00	87.50
I can better analyze student work for the purpose of identifying the mathematical skills the work represents.	88.89	84.00	87.50
I am better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	88.89	56.00	87.50
I am better able to coach others on the use of best practices for classroom instruction that support reasoning & problem solving skills.	88.89	60.00	100.00
I am more proficient in using multiple methods for measuring student performance.	91.67	95.83	75.00
I am better able to use assessment data to refine my teaching practices.	88.89	80.00	87.50
I was pleased with the overall quality of this professional development.	94.44	96.00	100.00

The response data from the second cohort of coaches is displayed in Table 12. Their responses became more positive over time on seven of the ten items in this bank of questions (with none of the responses under 70 percent agreement).

Table 12: Coaches' Overall Evaluation Survey, 2007-9, Cohort 2

	Pct Strongly Agree or Agree	
	Spring 2008 (N=33)	Spring 2009 (N=15)
I have a greater understanding of how children learn mathematics.	90.91	93.33
This training has increased my knowledge of effective instructional strategies for teaching mathematics.	90.91	93.33
I have increased my mathematical content knowledge.	65.62	86.67
I have greater knowledge of the Kentucky Core Content.	78.79	73.33
I can better analyze student work for the purpose of identifying the mathematical skills the work represents.	75.76	86.67
I am better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	96.97	93.33
I am better able to coach others on the use of best practices for classroom instruction that support reasoning & problem solving skills.	90.91	93.33
I am more proficient in using multiple methods for measuring student performance.	90.91	86.67
I am better able to use assessment data to refine my teaching practices.	87.88	100.00
I was pleased with the overall quality of this professional development course.	84.85	86.67

Few differences exist between Cohorts 1 and 2 with the spring 2009 data; however, the spring 2008 data did show notable differences in the following questions: “This training has increased my knowledge of effective instructional strategies for teaching mathematics,” “I am better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students,” and “I am better able to coach others on the use of best practices for classroom instruction that support reasoning and problem solving skills.” Table 13 shows a 20 to 40 percent difference between the cohorts for these questions; for comparative reasons the other questions in this battery are listed as well.

Table 13: Coaches' Overall Evaluation Survey, 2007-2009

Cohort 1			Cohort 2	
Strongly Agree or Agree %			Strongly Agree or Agree %	
Spring 2008 (N=25)	Spring 2009 (N=8)		Spring 2008 (N=33)	Spring 2009 (N=15)
96.00	87.50	I have a greater understanding of how children learn mathematics.	90.91	93.33
68.00	87.50	This training has increased my knowledge of effective instructional strategies for teaching mathematics.	90.91	93.33
72.00	87.50	I have increased my mathematical content knowledge.	65.62	86.67
76.00	87.50	I have greater knowledge of the Kentucky Core Content.	78.79	73.33
84.00	87.50	I can better analyze student work for the purpose of identifying the mathematical skills the work represents.	75.76	86.67
56.00	87.50	I am better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	96.97	93.33
60.00	100.00	I am better able to coach others on the use of best practices for classroom instruction that support reasoning & problem solving skills.	90.91	93.33
95.83	75.00	I am more proficient in using multiple methods for measuring student performance.	90.91	86.67
80.00	87.50	I am better able to use assessment data to refine my teaching practices.	87.88	100.00
96.00	100.00	I was pleased with the overall quality of this professional development course.	84.85	86.67

Overall, coaches overwhelmingly report that the coaching program and its training opportunities enhanced their ability to effectively coach other teachers and created an environment that is conducive to building mathematics capacity, specifically through increased mathematics knowledge, knowledge of Kentucky Core Content, assessments, and classroom instruction. They were pleased with the quality of the professional development and perceived that they gained value from it.

Coaches' Perceptions of KCM. The OES also asked coaches a series of questions regarding the KCM resources, the KCM staff, the regional coordinators (RCs) and the weekly CENTRA meetings online. A comprehensive report of all responses is contained in Appendix C. The coaches' responses indicated that they accessed the KCM website most frequently for the purposes of obtaining information about training, locating contact information, and accessing resources for teaching. They appeared less likely to access the website to visit the discussion forum or entering coaching log data (see Appendix C).

The majority of the coaches (14 of 23, or 61%) reported that they had contacted the KCM staff members between two and five times during the school year. However, there was considerable variability in the number of contacts with the KCM staff (Table 14). Five coaches indicated that they had contacted the KCM staff ten times, and one indicated he/she had done so 20 times. Fully 100% of the respondents indicated that the KCM staff had responded to them in a timely manner and 96% (22 of 23) indicated that the response from the KCM had been helpful.

Table 14: Please estimate how many times in the past year you contacted a KCM staff member.

(Spring 2009 Survey, All Coaches)

Number Times Coach Contacted KCM Staff	Count	Percent
2	1	4.3
3	5	21.7
4	3	13.0
5	5	21.7
6	2	8.7
8	1	4.3
10	5	21.7
20	1	4.3

n = 23

Coaches were also given the opportunity to provide general, open-ended comments about the KCM staff. Of the 8 coaches providing comments, all provided clearly positive comments. For example, typical positive comments were: "Outstanding, supportive, understanding," and "Staff is always professional, informative and efficient" (see Appendix C for all comments).

Coaches also reported on their contacts with their regional coordinators and their participation in CENTRA meetings. Overall, 57% (12 of 21) of coaches indicated that they had contacted their RCs between one and five times. Four reported contacting their RC 10 or more times (see Table 15, below for details). All coaches (100%) indicated that the responses from the RCs were timely.

Table 15: In the past year, approximately how many times have you contacted your visiting regional coordinator?

(Spring 2009 Survey, All Coaches)

Number of Times Coach Contacted RC	Frequency	Percent
1	1	4.8
2	4	19.0
3	1	4.8
4	2	9.5
5	4	19.0
6	2	9.5
8	3	14.3
10	3	14.3
15	1	4.8

n = 21

All coaches reported receiving at least two visits from their RC, with the majority of coaches (17 of 21, or 81%) receiving 2 to 5 visits each (see Table 16). Eighty-seven percent of coaches indicated these visits were helpful, and the remaining 13% stated they were somewhat helpful.

Table 16: In the past year, how many times were you actually visited by your visiting regional coordinator?

(Spring 2009 Survey, All Coaches)

Number of Visits from RC	Frequency	Percent
2	3	14.3
3	5	23.8
4	5	23.8
5	4	19.0
7	2	9.5
8	1	4.8
10	1	4.8

n = 21

Coaches were also asked to respond to an open-ended question: “What was the primary benefit (if any) of having the RC visit you?” A total of 21 comments were provided. Of those, all identified at least one benefit of the RC visits. Many mentioned the value of sharing resources. For example, one coach stated, “My RC did a wonderful job of providing materials and leadership and knowledge.” Other typical comments included, “To toss around ideas about hosting/planning math nights.” See Appendix C for the full list of comments.

Finally, coaches were given the opportunity to make additional comments about their regional coordinators. A total of 14 coaches provided comments. Thirteen of these were clearly positive in nature and one was negative. Coaches made comments such as, “The experience of my RC is invaluable. She is a person who is willing to share her personal experiences in a way that will help a person to improve their teaching skills,” and “She organized a book study for all of the coaches in our region. We discussed issues, needs, growths, and the way kids learn math during our monthly math cohort meetings. She created relationships with everyone and facilitated great meetings.” The negative comment was, “Planning future project beyond the capacity of RC.” See Appendix C for the full text of comments.

Fully 96% (22/23) of the coaches reported that the CENTRA meetings were at least somewhat helpful to them. A total of 20 coaches also provided open-ended comments regarding the primary benefit of the CENTRA meetings. Most cited the opportunity to confer with other coaches as a primary benefit. Coaches made comments such as, “getting to talk to other coaches,” “sharing problems and solutions with other coaches,” and “discussion with other coaches.” See Appendix C for the full text of comments.

The vast majority of coaches viewed the staff of the KCM and Regional Coordinators to be supportive, knowledgeable, and helpful when called upon. They served to enhance the coaches’ ability to effectively perform as a coach in their school. CENTRA meetings which were provided by the KCM and facilitated by both KCM staff and regional coordinators were also viewed as helpful in that they allowed for communication and the sharing of information among coaches.

Coaches' Perceptions of Support for the Mathematics Coaching Program. The OES for the coaches included a series of questions assessing the coaches' perceptions of the adequacy of the support given to them by their school or district. Generally, coaches in the first cohort felt the program was better supported than coaches in Cohort 2. Table 17 displays the response data on the support items for both cohorts. Appendix C displays the response frequencies for all coaches.

Table 17: Coaches' Perceptions of Support, Cohorts 1-2

(OES Survey, Spring 2008 & Spring 2009)

Cohort 1 Percent Strongly Agree or Agree			Cohort 2 Percent Strongly Agree or Agree	
Spring 2008 (N=25)	Spring 2009 (N=8)		Spring 2008 (N=33)	Spring 2009 (N=15)
84.00	100.00	I receive the necessary support from my principal to implement the Mathematics Coaching Program in my school.	66.67	80.00
76.00	100.00	I am given time to properly prepare for my role as a coach.	78.79	73.33
96.00	100.00	My principal supports my attendance at the Mentor/Coaching professional development sessions that occur throughout the year.	96.97	100.00
92.00	100.00	I am provided, by the school, proper space to conduct my duties as a mathematics coach in my school.	93.94	73.33
70.83	62.50	Other teachers in my school value the coaching program.	66.67	86.67
84.00	100.00	The coaching program, as implemented in my school, has improved the quality of mathematics teaching in my school.	75.76	100.00

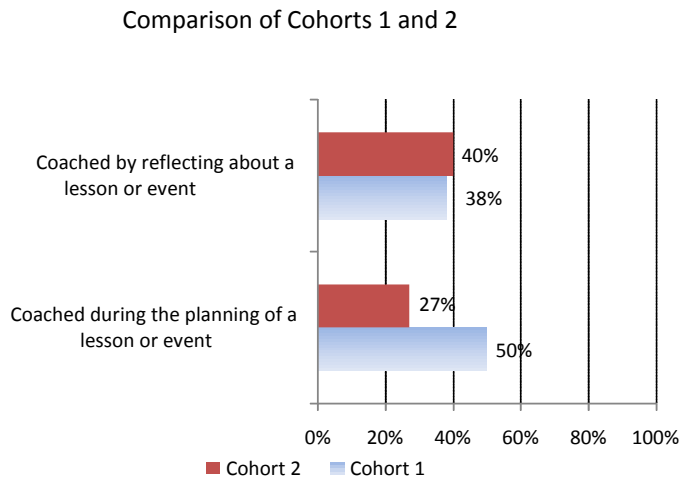
Although the support coaches received from within their schools and districts are mostly outside the direct control of the KCM it can substantially affect the success of the coaching program. Coaches all report that support from school administrators, district personnel, and other teacher in their school/district gave them the time, space, and support needed to effectively coach other teachers. This administrative support is important to successful coaching programs.

Coaches' Perceptions of Coaching Situation. As noted, the OES for the coaches was modified prior to the spring 2009 administration in response to feedback from the coaches and the staff at KCM. This revised OES contained three items designed to assess the situations in which coaches were using their skills. Figure 1 displays the response frequencies for reflective and planning coaching conversations comparing Cohort 1 and Cohort 2 for each item.

Figure 1 also shows the perception of the type of coaching conversations coaches had with teachers. There were no differences when looking at the percentage of coaches who stated that

“most or all” of their coaching conversations were reflective: Cohort 1, 38% (or 3 of 8) and Cohort 2, 40% (or 6 of 15), respectively. Planning conversations did show a difference among those who responded to the question, with 50% (4 of 8) of Cohort 1 stating that “most or all” of their coaching conversations were planning, while only 27% (4 of 15) of Cohort 2 responded in this manner. Again, the small counts made tests of significance impractical. Differences are noted but this does not imply significance.

Figure 1: The Coaching Conversation: Planning or Reflective
(OES Survey, Spring 2009)



Cohort 1, n = 8
Cohort 2, n = 15

Coaches were also asked about being able to observe the planned lesson or event. Thirty-eight percent of Cohort 1 (3 of 8) and 27% of Cohort 2 (4 of 15) were able to observe the planned lesson or event in which they were involved via their coaching duties.

Tables 18a and 18b look at cohort differences regarding both the development of a coaching community and the ability of the coach to provide professional development to coachees within the school or district in which they operate. In the spring 2009 survey, all coaches agreed or strongly agreed that they were able to offer effective professional development to coachees (Table 18b). Cohort 1 coaches agreed or strongly agreed more often than did Cohort 2 with the statement, “at my school (or schools), we now have a well-established community of coaches,” at 50 and 27 percent, respectively (Table 18a). This perception needs to be reviewed annually to see if it stabilizes at a high level among all Cohorts.

Table 18a: Cohorts 1-2, "At my school (or schools), we now have a well-established community of coaches."

(Coach Overall Evaluation Survey, Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Cohort 1	.00	37.50	12.50	25.00	25.00	3.38 (1.30)	8
Cohort 2	6.67	26.67	40.00	13.33	13.33	3.00 (1.13)	15

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 18b: Cohorts 1-2, "I have been able to offer effective professional development for my coachees."

(Coach Overall Evaluation Survey, Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Cohort 1	.00	.00	.00	50.00	50.00	4.50 (.53)	8
Cohort 2	.00	.00	.00	80.00	20.00	4.20 (.41)	15

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

The QUILT Survey

QUILT Survey. This survey was used to assess the *Questioning and Understanding to Improve Learning and Thinking* training offered to coaches in a three-course sequence in September 2008, December 2008, and February 2009; the same survey was administered at each of the trainings. All results are included in Appendix C. The QUILT Survey focuses on the perceived usefulness of the information presented as well as how the training benefited the participant in their role as coach. Counts for the February 2009 training were low due to inclement weather.

Table 19 supports the assertion that the professional development goals were met. A solid majority of coaches agreed or strongly agreed that they now have a greater ability to communicate with and question students effectively. They also agreed that they feel better prepared to function as a coach in the school. Over 97% of the respondents agreed or strongly agreed that they were pleased with the quality of the QUILT professional development. The only item that had less than 80% agreement was, “I have the knowledge to teach students how to ask questions effectively.” The percentages were similar for all surveys.

Table 19: Coach QUILT Survey

	October 2008			December 2008			February 2009		
	Agree or Strongly Agree %	Mean Score (SD)	Count	Agree or Strongly Agree %	Mean Score (SD)	Count	Agree or Strongly Agree %	Mean Score (SD)	Count
I have a greater understanding of the relationship between questioning practices in the classroom and student learning outcomes.	88.2	4.06 (.556)	17	92.3	4.38 (1.121)	13	100.0	4.40 (.548)	5
I can effectively communicate the characteristics of "effective classroom questioning" to teachers in my school/district.	100.0	4.29 (.470)	17	92.3	4.15 (1.068)	13	80.0	4.00 (.707)	5
I can identify teacher behaviors that limit effective classroom questioning.	100.0	4.35 (.493)	17	84.6	4.00 (1.080)	13	100.0	4.00 (.000)	5
I am able to effectively use the verbal techniques for eliciting student responses to questions that were presented in this program.	82.4	3.94 (.556)	17	92.3	4.31 (.855)	13	100.0	4.20 (.447)	5
I am able to effectively use the nonverbal techniques for eliciting student responses to questions that were presented in this program.**	-	-	0	84.6	4.00 (.816)	13	80.0	4.00 (.707)	5
I have a greater understanding of how my reaction to student responses affects their responding patterns.**	-	-	0	92.3	4.15 (1.068)	13	100.0	4.60 (.548)	5
I can accurately assess my own personal questioning practices.	100.0	4.35 (.493)	17	92.3	4.00 (1.000)	13	100.0	4.20 (.447)	5
I can accurately assess the personal questioning practices of other teachers.	100.0	4.24 (.437)	17	92.3	4.08 (1.038)	13	100.0	4.00 (.000)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

** Question not asked on the October 2008 Survey.

Table 19: Coach QUILT Survey continued...

	October 2008			December 2008			February 2009		
	Agree or Strongly Agree %	Mean Score (SD)	Count	Agree or Strongly Agree %	Mean Score (SD)	Count	Agree or Strongly Agree %	Mean Score (SD)	Count
I feel better prepared to function as a mathematics coach for my school.	88.2	4.24 (.664)	17	92.3	4.08 (1.038)	13	100.0	4.20 (.447)	5
I will be able to relay the strategies presented in this professional development program to other teachers.	100.0	4.35 (.493)	17	92.3	4.23 (1.092)	13	100.0	4.20 (.447)	5
I have better understanding of what constitutes the effective questioning of students in a classroom setting.	88.2	4.12 (.600)	17	92.3	4.23 (1.092)	13	100.0	4.20 (.447)	5
I have greater knowledge of effective questioning techniques and practices that encourage student responses.	88.2	4.18 (.636)	17	92.3	4.31 (1.109)	13	100.0	4.40 (.548)	5
I have the knowledge to teach students how to ask questions effectively.	76.5	3.82 (.728)	17	76.9	3.85 (1.068)	13	60.0	3.80 (.837)	5
I was pleased with the overall quality of the QUILT professional development program.	100.0	4.50 (.516)	16	92.3	4.31 (1.109)	13	100.0	4.40 (.548)	5
I can communicate to other teachers how the asking of classroom questions affects a students' readiness to respond.***	100.0	4.35 (.493)	17	-	-	0	-	-	0

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

*** Question not asked on the December 2008 or February 2009 Surveys.

Coachee Evaluation Survey

Coachee Evaluation Survey. This survey focused on the benefits and challenges of the Mathematics Coaching Program as seen through the eyes of the coachees. Appendix D shows all of the data from the Coachees' Evaluation Survey (CES) as well as all open-end comments. Due to the small sample sizes, data are reported in total and by cohort. Although there was not a new cohort of KCM coaches for the 2008-2009 school year, there were *coachees* whose first year of being coached was 2008-2009; these are labeled "Cohort 3" coachees.

In last year's evaluation report, the Cohort 1 coachees reported meeting more frequently with their coaches than did Cohort 2. In Year 3, this changed. The frequency of meetings is now more evenly balanced, with Cohorts 2 and 3 actually reporting meeting more frequently than Cohort 1 (see Table 20).

Table 20: Coachee Evaluation Survey by Cohort (Spring 2008 & 2009)

How often (on average) did you meet with your school's mathematics coach during the school year?	<u>Cohort 1</u>		<u>Cohort 2</u>		<u>Cohort 3</u>	
	Percent	Count	Percent	Count	Percent	Count
2007-8 School Year (Spring 2008)						
I did not meet with my coach	1.8	2	1.3	2	--	--
Less than once a month	14.0	16	20.1	30	--	--
At least once a month	21.9	25	26.8	40	--	--
At least once every two weeks	14.9	17	21.5	32	--	--
Once a week	21.9	25	12.1	18	--	--
Two or more times a week	25.4	29	18.1	27	--	--
Total		114		149		0
2008-9 School Year (Spring 2009)						
I did not meet with my coach	.0	0	.0	0	.0	0
Less than once a month	11.1	2	21.7	5	16.7	2
At least once a month	50.0	9	34.8	8	16.7	2
At least once every two weeks	5.6	1	26.1	6	25.0	3
Once a week	16.7	3	8.7	2	16.7	2
Two or more times a week	16.7	3	8.7	2	25.0	3
Total		18		23		12

As anticipated, Table 21 shows that those who met most often with their coach perceived these meetings as being more helpful than those who met less often. This table also indicates that the least-discussed topic at all grade levels was classroom management. Collectively, coachees met most often about assessment strategies, followed closely by mathematics content.

Table 21: Coachee Evaluation Survey, Cohorts 1-3 (Spring 2009)

How often did you talk with your coach about this topic?	How helpful were these conversations?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Classroom Management					
Never	.0	.0	.0	100.0	19
Occasionally	4.8	23.8	71.4	.0	21
Frequently	20.0	.0	80.0	.0	5
Instructional Strategies					
Never	.0	.0	50.0	50.0	2
Occasionally	4.0	40.0	56.0	.0	25
Frequently	.0	10.5	89.5	.0	19
Assessment Strategies					
Never	.0	.0	.0	100.0	1
Occasionally	.0	47.6	52.4	.0	21
Frequently	4.3	4.3	91.3	.0	23
Mathematics Content					
Never	33.3	.0	.0	66.7	3
Occasionally	5.0	45.0	50.0	.0	20
Frequently	.0	4.5	95.5	.0	22

However, when the data is examined by cohort, some variations in topics discussed are apparent. Cohort 1 focused more on mathematics content, which is reasonable considering they have been in the program for three years. Cohort 2 was evenly split among instructional strategies, assessment strategies and mathematical content. Cohort 3 was most focused on instructional strategies (see Table 22).

Table 22: How often did you talk to your coach about the following topics?

(Coachee Evaluation Survey, Spring 2009, Cohorts 1-3)

	Never %	Occasionally %	Frequently %	Count
Cohort 1				
Classroom management	55.56	44.44	0.00	0
Instructional strategies	11.11	61.11	27.78	18
Assessment Strategies	0.00	50.00	50.00	18
Mathematical content	0.00	44.44	55.56	18
Cohort 2				
Classroom management	39.13	52.17	8.70	23
Instructional strategies	0.00	65.22	34.78	23
Assessment Strategies	8.70	56.52	34.78	23
Mathematical content	8.70	56.52	34.78	23
Cohort 3				
Classroom management	33.33	41.67	25.00	12
Instructional strategies	0.00	33.33	66.67	12
Assessment Strategies	8.33	41.67	50.00	12
Mathematical content	16.67	25.00	58.33	12

Table 23, below, shows the specific breakdown by cohort and topic. A rating of “not applicable” meant that the topic was never discussed by the coach and coachee.

Table 23: How helpful were these conversations around the following topics?

(Coachee Evaluation Survey, Spring 2009, Cohorts 1-3)

	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable	Count
Cohort 1					
Classroom management	0.00	12.50	31.25	56.25	16
Instructional strategies	0.00	12.50	81.25	6.25	16
Assessment Strategies	0.00	18.75	81.25	0.00	16
Mathematical content	0.00	18.75	81.25	0.00	16
Cohort 2					
Classroom management	11.76	5.88	47.06	35.3	17
Instructional strategies	5.56	38.89	55.56	0.00	18
Assessment Strategies	5.88	29.41	64.71	0.00	17
Mathematical content	5.88	35.29	52.94	5.88	17
Cohort 3					
Classroom management	0.00	16.67	50.00	33.33	12
Instructional strategies	0.00	25.00	75.00	0.00	12
Assessment Strategies	0.00	25.00	66.67	8.33	12
Mathematical content	8.33	8.33	75.00	8.33	12

Table 24 shows the various types of information, materials and resources provided by coaches to coachees.

A large percentage of Cohort 1 coachees stated that resources, materials and information were provided for the following topics: understanding how students learn mathematics (94.4%), analyzing student work (88.89%), and identifying best practices for classroom instruction (88.89%). Cohort 2 coachees agreed less often that coaches provided resources, materials, and information to them than did both Cohort 1 and Cohort 3. This was consistent for all questions. Cohort 3 coachees agreed that they were provided resources, materials and information about the following topics: understanding how students learn (91.67%) and effective instructional strategies for teaching mathematics (100%). This adds further support to findings in Table 23, namely that Cohort 3

coachees spent the most time on instructional strategies. Overall, all cohorts of coachees reported that coaches were least likely to disseminate information, materials, and resources related to mathematical content knowledge.

Table 24: Cohorts 1-3, “My mathematics coach has provided information, resources, or materials that...”

(Coachee Evaluation Survey, Spring 2009)

	Cohort 1		Cohort 2		Cohort 3	
	Strongly Agree or Agree %	Count	Strongly Agree or Agree %	Count	Strongly Agree or Agree %	Count
Increase my understanding of how students learn mathematics.	94.4	18	60.87	23	91.67	12
Increase my knowledge of effective instructional strategies for teaching mathematics.	83.3	18	78.26	23	100.0	12
Increase my mathematical content knowledge.	72.23	18	47.83	23	72.2	12
Increase my knowledge of the Kentucky Core Content.	83.34	18	56.52	23	66.67	12
Allow me to better analyze student work for the purpose of identifying the mathematical skills the work represents.	88.89	18	56.52	23	75.0	12
Allow me to better <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	88.89	18	69.56	23	91.67	12

The techniques used most often by coaches were planning, data collection and reflective discussions; co-teaching was used least often (Table 25), with co-teaching, reflective discussions and modeling being rated as the most helpful.

Table 25: Coachee Evaluation Survey, All Cohorts (Spring 2009)

How often did your coach use any of the following techniques?	How helpful were these techniques?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Co-teaching					
Never	.0	.0	5.3	94.7	19
Occasionally	4.8	23.8	71.4	.0	21
Frequently	.0	.0	100.0	.0	3
Modeling					
Never	7.7	.0	.0	92.3	13
Occasionally	8.3	25.0	66.7	.0	24
Frequently	.0	.0	100.0	.0	7
Planning Discussions					
Never	20.0	.0	20.0	60.0	5
Occasionally	4.0	52.0	44.0	.0	25
Frequently	.0	6.2	93.8	.0	16
Data Collection					
Never	.0	.0	25.0	75.0	4
Occasionally	9.5	42.9	47.6	.0	21
Frequently	5.3	10.5	84.2	.0	19
Reflective Discussions					
Never	20.0	.0	.0	80.0	5
Occasionally	4.0	52.0	44.0	.0	25
Frequently	.0	.0	100.0	.0	15

Cohort 1 coachees agreed or strongly agreed more often than Cohort 2 coachees that teachers in their building were open to working with a mathematics coach. Overall, Cohort 2 showed a lower level of agreement (78% agreeing or strongly agreeing) than either Cohort 1 or Cohort 3, (88.9% and 81.8%, respectively) (see Table 26).

Table 26: “Teachers in my building have been open to working with the mathematics coach.”

(Coachee Evaluation Survey, Spring 2009, Cohorts 1-3)

	<u>Cohort 1</u>		<u>Cohort 2</u>		<u>Cohort 3</u>	
	Count	Percent	Count	Percent	Count	Percent
Strongly Disagree	0	0.0	1	4.3	0	0.0
Disagree	2	11.1	1	4.3	0	0.0
Neutral	0	0.0	3	13.0	2	18.2
Agree	7	38.9	11	47.8	6	54.5
Strongly Agree	9	50.0	7	30.4	3	27.3
Total	18		23		11	

Table 27 shows that, overall, more than 72% of coachees either agreed or strongly agreed that the coach received appropriate support from the school/district’s administration. Cohort 2 perceived the lowest level of support, at 52% agreeing or strongly agreeing, while Cohort 1 perceived the highest level of administrative support, with 94% agreeing or strongly agreeing and Cohort 3 had 83.3% agreeing or strongly agreeing that they received the appropriate level of administrative support.

Table 27: “My mathematics coach receives appropriate administrative support.”

(Coachee Evaluation Survey, Spring 2009, Cohorts 1-3)

	<u>Cohort 1</u>		<u>Cohort 2</u>		<u>Cohort 3</u>		<u>All</u>	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Strongly Disagree	0	0.0	1	4.3	0	0.0	1	1.8
Disagree	1	5.6	4	17.4	0	0.0	5	9.2
Neutral	0	0.0	7	30.4	2	16.7	9	16.7
Agree	8	44.4	11	47.8	7	58.3	26	48.2
Strongly Agree	9	50.0	1	4.3	3	25.0	13	24.1
Total	18		24		12		54	

Coach Administrator/Principal Survey (CAS)

This survey was developed by UCESC to ascertain the degree to which administrators and principals were satisfied with the program, to discover the benefits and challenges of the program experienced by the principals and administrators, as well as what additional resources are needed to increase the success of the program. Twenty-three administrators with either a Cohort 1 or Cohort 2 coach in their school building or district responded to the survey. Results imply that administrators perceive the Mathematics Coaching Program as being beneficial to their school/district's mathematics programs, with the main challenges being funding and the loss of half a teacher full time equivalency (FTE) for mathematics instruction.

In general, coaches' administrators overwhelmingly attributed improvements in teaching practices within their schools to the Mathematics Coaching Program (see Table 28). Administrators reported that because of their school's involvement, teachers had a greater understanding of how students learn mathematics (100%), increased their knowledge of effective instructional strategies (100%), and were better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students (100 %).

Table 28: “Because of my school’s involvement in the Mathematics Coaching Program...”

(Administrators Survey, Mathematics Coaching Program, Cohorts 1-2, Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
Teachers in this school or district have a greater understanding of how students learn mathematics.	0.0	0.0	0.0	65.2	34.8	23
Teachers in this school or district have increased their knowledge of effective instructional strategies for teaching mathematics.	0.0	0.0	0.0	56.5	43.5	23
Teachers in this school or district have increased their mathematical content knowledge.	0.0	0.0	4.3	56.5	39.1	23
Teachers in this school or district have greater knowledge of the Kentucky Core Content.	0.0	0.0	8.7	65.2	26.1	23
Teachers in this school or district can better analyze student work for the purpose of identifying the mathematical skills the work represents.	0.0	0.0	8.7	69.6	21.7	23
Teachers in this school or district are better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	0.0	0.0	0.0	63.6	36.4	22

Table 29 shows that all but one (96% agreed or strongly agreed) administrator reported the Mathematics Coaching Program both encouraged learning that was in line with Kentucky Core Content and improved the quality of mathematics teaching in their school/district.

Table 29: “The Mathematics Coaching Program, as implemented in my school or district...”

(Administrators Survey, Mathematics Coaching Program, Cohorts 1-2, Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
Encourages learning that is in line with Kentucky Core Content.	4.3	0.0	0.0	26.1	69.6	23
Has improved the quality of mathematics teaching in my school/district.	4.3	0.0	0.0	36.4	59.1	23

Specific benefits of the Mathematics Coaching Program can be seen at every level (comments are in Appendix E). Administrators reported both an improved understanding of the curriculum and an increased mathematics capacity in the building, which led to improved student achievement. They perceived that teachers are teaching better and have a better understanding of best practices in mathematics. For example, one administrator stated, “The modeling and implementing of best practices for teaching math by our Math Coach has enabled us to make substantial growth with student achievement and understanding of math. The excellent training and guidance the math coach has received will enable our school to sustain and only improve on our math growth and achievement.” Another said, “Our teachers have a better understanding of math content and strategies. Our students continue to perform better because of the increased usage of data to drive instruction and of best practices instruction.” There were no negative or neutral comments recorded by the administrators related to this question.

The major challenges as reported by administrators were resources and time constraints, splitting a coach between schools, the jealousy of some teachers towards the coach, and the demands of mandated programs such as Response to Intervention (RTI). Appendix E contains a report of all challenges listed by administrators that were attributed to their schools’ involvement in the Mathematics Coaching Program.

Table 30 shows that nearly all administrators (13 of 14) of Cohort 2 coaches who responded to the survey intend for their school to participate in the Mathematics Coaching Program next year.

Table 30: If you have just completed your second year with a Mathematics Coach, are you planning to complete an application to return to the Mathematics Coaching Program for Year 3?

	Percent %	Count*
Yes	92.9	13
No	7.1	1

*Counts vary due to missing data.

Similarly, Table 31 shows that even though their coach’s training is complete, nearly all of current Cohort 1 school administrators who responded to the survey (6 of 7) will continue their Mathematics Coaching Programs.

Table 31: If you have completed your third year with a Mathematics Coach, will your coach continue with her/his coaching duties next year even though their formal training is complete?

	Percent %	Count*
Yes	85.7	6
No	14.3	1

*Counts vary due to missing data.

Funding, or a lack thereof, was the only reason given for deciding not to participate in the Mathematics Coaching Program during the 2009-10 school year. Appendix E shows the verbatim responses administrators gave for deciding to discontinue their Mathematics Coaching Program.

In summary, administrators perceived that the Mathematics Coaching Program has benefited their school or district’s teachers and students alike, but some lack the funding and resources necessary to continue their participation.

Implementation of Mathematics Coaching Program

Logistical Implementation. The very challenging task of assessing implementation has remained a high priority for UCESC and the KCM and improved procedures are evolving steadily. This year, basic aspects of program implementation were gleaned from information gathered via questions from the *Coachee Evaluation Survey* (CES) and the *Coach Administrators Survey* (CAS).⁸

Coachees (those teachers being coached) and school/district administrators both agreed that the activities coaches provided to their schools were valuable. These included assisting in the location of resources, being a resource in their schools, co-teaching, modeling, assisting with data collection, offering professional development, and providing information on assessment tools. Although there is solid evidence that all coaches undertook some or all of these activities, the amount of time individual coaches spent on these activities separately or together is unknown. As shown by these data, it is clear that the duties of coaches in the program vary by school and district.

A few of the coachees and administrators also noted areas for improvement. Some perceived that when coaches were split between two (or more) buildings during the day this reduced the effectiveness of the coach. As mentioned previously, budget cuts made continuation of the program unlikely beyond the funding period for some schools or districts.

Fidelity of Implementation. Fidelity of implementation of Cognitive CoachingSM, student achievement, and changes in teacher practices are being studied and reviewed by the Center for Evaluation and Education Policy at Indiana University.

⁸ A description of these surveys is located on page 4 and the instruments can be viewed in Appendix A.

Appendixes

Appendix A: Data Collection Instruments

Mathematics Beliefs Survey

Kentucky Center for Mathematics

Thank you for taking the time to complete this survey. You are being asked to complete this survey to measure teacher attitudes towards mathematics, teaching mathematics, and learning mathematics. This survey may or may not benefit you directly, but it will assist the Kentucky Center for Mathematics in gauging teacher attitudes towards mathematics within the State of Kentucky. There are no anticipated risks associated with your participation in this survey. Participants can withdraw from the survey at any time.

All responses to the survey will remain confidential. Data will be analyzed in aggregate and no individual responses will be reported. By completing this survey, you indicate your consent to participate in the study. This project has been approved by the Northern Kentucky University's Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants.

Confidential Identifier: Because we will be collecting information over the next year through multiple surveys and observations, we need an identification number which will allow researchers to match responses to the same individual. Therefore we are asking that you provide the following information. All "identifiers" will be stripped from the final database.

The last 4 digits of your Social Security number

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Month of your birth (e.g., January = 01, March = 03, October = 10)

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Day of your birth (1st = 01, 15th = 15, 23rd = 23)

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In what year did you first become involved in the Mathematics Coaching Program at your school?

- 2006-7 School Year
- 2007-8 School Year
- 2008-9 School Year

Directions: Please read the following responses and choose which response most accurately describes your opinion. Please fill in the circles completely.

Examples:

Wrong Wrong Wrong Correct

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Often in mathematics, I do not understand the concept behind a problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to remember most of the mathematics I learn in a course after the course is over.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get frustrated if I don't understand what I am studying in mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like doing mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am very interested in mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to learn mathematics well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at doing mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to successfully solve most mathematical problems with which I am confronted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People learn mathematics by listening to lecture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning mathematics mainly involves memorizing procedures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In order to learn mathematics you need to learn a different method for each new type of problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

People learn mathematics by working together in cooperative groups.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to understand the reasoning behind the procedures I use in mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know I understand mathematics when I can apply mathematics to a new situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People learn mathematics by doing hands on activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know I understand mathematics when I get a good grade on an exam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anyone can learn mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know I understand mathematics when I can explain the mathematics to someone else.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making mistakes is part of learning mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To understand mathematics, students must solve many problems following examples provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing mathematics consists mainly of using rules.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting the right answer is the most important part of mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solving mathematics problems frequently involves exploration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.

Mathematics is an uncreative subject.

The most important part of mathematics is computation.

There are several ways to find the correct solution to a mathematics problem.

Those who are good in mathematics can solve a mathematics problem within a few minutes.

Knowing step-by-step procedures is necessary to solve mathematical problems.

Kentucky Center for Mathematics: Mathematics Coaching Program

Final Coaches' Survey May 2009

Thank you for taking the time to complete this survey. You are being asked to complete this survey to evaluate the effectiveness of the Mathematics Coaching Program that you have participated in during the 2008-2009 school year. This survey may or may not benefit you directly but your input could assist the Kentucky Center for Mathematics in improving future professional development programs for mathematics coaches within the State of Kentucky. There are no anticipated risks associated with your participation in this survey.

All responses to the survey will remain confidential. Data will be analyzed in aggregate and no individual responses will be reported. By completing this survey, you indicate your consent to participate in the study. If you have any questions or concerns about your rights as a participant then we ask that you please contact Philip J. Moberg, Ph.D., Chair of the Institutional Review Board, Northern Kentucky University at (859) 572-1913/email: mobergp1@nku.edu. If you have questions about the evaluation work being undertaken please contact Kirsten Fleming, Ph.D., Executive Director of the Kentucky Center for Mathematics at (859)572-7690/email: kcm@nku.edu.

Confidential Identifier: Because we will be collecting information over the next year through multiple surveys and observations, we need an identification number which will allow researchers to match responses to the same individual. Therefore we are asking that you provide the following information. All "identifiers" will be stripped from the final database.

The last 4 digits of your Social Security number

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Month of your birth (e.g., January = 01, March = 03, October = 10)

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Day of your birth (1st = 01, 15th = 15, 23rd = 23)

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In the space below, please describe briefly *why* you became a Mathematics Coach:

THANK YOU! PLEASE GO ON TO THE REST OF THE SURVEY.

When answering these questions please think about all professional development and training you received this year due to your involvement in the Mathematics Coaching Program. This will include any training or professional development you received during the summer 2008 and throughout the 2008-9 school year, weekly Centra meetings, and any other support you may have received from your Regional Coordinator or the Kentucky Center for Mathematics.

Please read the following statements and choose the response that most accurately describes your opinion regarding how this professional development and training has or has not helped you in your role as a mathematics coach in your school.

With the Mathematics Coaching Program...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have a greater understanding of how students learn mathematics.	0	0	0	0	0
I have increased my knowledge of effective instructional strategies for teaching mathematics.	0	0	0	0	0
I have increased my mathematical content knowledge.	0	0	0	0	0
I have greater knowledge of the Kentucky Core Content.	0	0	0	0	0
I am better able to coach others in their teaching of Kentucky Core Content.	0	0	0	0	0
I can better analyze student work for the purpose of identifying the mathematical skills the work represents.	0	0	0	0	0
I am better able to identify best practices for classroom instruction that support reasoning and problem solving skills.	0	0	0	0	0
I am better able to coach others on the use of best practices for classroom instruction that support reasoning & problem solving skills.	0	0	0	0	0
I am more proficient in using multiple methods for measuring student performance.	0	0	0	0	0
I am better able to coach others in using multiple methods for measuring student performance.	0	0	0	0	0
I am better able to use assessment data to refine my teaching practices.	0	0	0	0	0
I am more able to coach others in how to use assessment data to refine their teaching practices.	0	0	0	0	0

Overall...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The materials and resources provided in this mathematics coaching program will assist me in coaching other teachers.	0	0	0	0	0
The amount of time required in training for the mathematics coaching program is appropriate to meet my needs as a mathematics coach.	0	0	0	0	0
I am pleased with the overall quality of this professional development program.	0	0	0	0	0

KCM maintains an internet website that includes pages for Mathematics Coaches. The items below ask you about how you might use the website in relation to your coaching activities.

I use the KCM website to:	<u>Never</u>	<u>Seldom</u>	<u>Occasionally</u>	<u>Frequently</u>
Enter coaching log data.	0	0	0	0
Access information about training and/or applications.	0	0	0	0
Find contact information for other personnel (e.g. fellow coach, RC or KCM staff).	0	0	0	0
Access resources from the KCM Resources page.	0	0	0	0
Access resources for teaching from the Coaching webpage.	0	0	0	0
Visit the discussion forum.	0	0	0	0

The questions below will ask you about your *visiting* regional coordinator. Please give us your honest feedback about your interactions with that RC this year.

22. In the past year, approximately how many times have you contacted your *visiting* regional coordinator? _____

23. Overall, did the visiting regional coordinator respond to you/your need in a timely manner?

- Yes
- No

24. In the past year, how many times were you actually visited by your *visiting* regional coordinator? _____

25. Were these visits helpful to you as a coach?

- Yes, Helpful
- Somewhat Helpful
- No, Not at all Helpful

26. What was the primary benefit (if any) of having the RC visit you?

27. Other comments about the regional coordinators?

The next set of questions will ask you about your interactions with the staff at the Kentucky Center for Mathematics.

28. Please estimate how many times in the past year you initiated contact with a staff person at the Kentucky Center for Mathematics?

Other: _____

29. Overall, did the staff person at the Kentucky Center for Mathematics respond to you/your need in a timely manner?

- Yes
- No

30. Overall, was the staff person at the Kentucky Center for Mathematics helpful in responding to your needs as a coach?

- Yes, Helpful
- Somewhat Helpful
- No, Not at all Helpful

31. Other comments about the staff at the Kentucky Center for Mathematics or the Center in general?

We have just two questions about your CENTRA meetings.

32. Overall, were your helpful were CENTRA meetings in assisting you with your coaching duties?

- Yes, Helpful
- Somewhat Helpful
- No, Not at all Helpful

33. What was the primary benefit, if any, of these CENTRA meetings?

34. This set of questions that you will be asked are about different types of support that you may or may not have received. Please read the list of statements below, and state whether you agree or disagree with each.

Support from your school or district...	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
I receive the necessary support from my principal to implement the Mathematics Coaching Program in my school.	0	0	0	0	0
I am given time to properly prepare for my role as a coach.	0	0	0	0	0
My principal supports my attendance at the Mentor/Coaching professional development sessions that occur throughout the year.	0	0	0	0	0
I am provided, by the school, proper space to conduct my duties as a mathematics coach in my school.	0	0	0	0	0
Other teachers in my school value the coaching program.	0	0	0	0	0
The coaching program, as implemented in my school, has improved the quality of mathematics teaching in my school.	0	0	0	0	0

We have a just few questions about your experience as a coach *in general*.

	<u>With NO Coachees</u>	<u>With FEW Coachees</u>	<u>With SOME Coachees</u>	<u>With MOST Coachees</u>	<u>With ALL Coachees</u>
35. Thinking about your coaching activities <i>in general</i> ...					
a. I was able to coach them during the planning of a lesson or event.	0	0	0	0	0
b. I was able to observe the planned lesson or event.	0	0	0	0	0
c. I was able to coach them by reflecting about the lesson or event.	0	0	0	0	0

36. Again, thinking about your coaching activities <i>in general</i> ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a. At my school (or schools), we now have a well established community of coaches.	0	0	0	0	0
b. I have been able to offer effective professional development for my coachees.	0	0	0	0	0

37. How long have you been in this Mathematics Coaching Program?

- This is my first year.
- This is my second year.
- This is my third year.

37c. Will you continue with your coaching duties next year even though your formal training is complete?

- Yes
- No

37c1. If "NO", what are some of the reasons that you or your district will not be continuing its' coaching initiative??

37c2. If "YES," would you be willing to: (check all that apply)

- Continue filming observations and completing video observation forms for analysis by KCM?
- Complete surveys regarding your coaching duties?
- Help create and participate in a Coaching Alumni PLC?

Evaluation of QUILT Program, 2008-9

Kentucky Center for Mathematics

Thank you for taking the time to complete this survey. You are being asked to complete this survey to evaluate the effectiveness of the QUILT Program that you have just completed. This survey may or may not benefit you directly but your input could assist the Kentucky Center for Mathematics in improving future professional development sessions for teachers within the State of Kentucky. There are no anticipated risks associated with your participation in this survey. Participants can withdraw from the survey at any time.

All responses to the survey will remain confidential. Data will be analyzed in aggregate and no individual responses will be reported. By completing this survey, you indicate your consent to participate in the study. This project has been approved by the Northern Kentucky University's Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants.

Confidential Identifier: Because we will be collecting information over the next year through multiple surveys and observations, we need an identification number which will allow researchers to match responses to the same individual. Therefore we are asking that you provide the following information. All "identifiers" will be stripped from the final database.

The last 4 digits of your Social Security number

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Month of your birth (e.g., January = 01, March = 03, October = 10)

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Day of your birth (1st = 01, 15th = 15, 23rd = 23)

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Directions: Read the following responses and choose which one most accurately describes your opinion. When completing this survey, please think only of the information provided to you in the QUILT Program that you have just completed. Please fill in the circles completely.

Examples:

<input type="radio"/> Wrong	<input type="radio"/> Wrong	<input checked="" type="radio"/> Wrong	<input type="radio"/> Correct
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<u>With the QUILT Program...</u>	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
I have a greater understanding of the relationship between questioning practices in the classroom and student learning outcomes.	0	0	0	0	0
I can effectively communicate the characteristics of "effective classroom questioning" to teachers in my school/district.	0	0	0	0	0
I can identify teacher behaviors that limit effective classroom questioning.	0	0	0	0	0
<u>With the QUILT Program...</u>	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
I can communicate to other teachers how the asking of classroom questions affects a students' readiness to respond.	0	0	0	0	0
I am able to effectively use the <u>verbal</u> techniques for eliciting student responses to questions that were presented in this program.	0	0	0	0	0
I am able to effectively use the <u>nonverbal</u> techniques for eliciting student responses to questions that were presented in this program.	0	0	0	0	0
I have a greater understanding of how my reaction to student responses affects their responding patterns.	0	0	0	0	0
I can accurately assess my own personal questioning practices.	0	0	0	0	0
I can accurately assess the personal questioning practices of other teachers.	0	0	0	0	0
I feel better prepared to function as a mathematics coach for my school.	0	0	0	0	0
I will be able to relay the strategies presented in this professional development program to other teachers.	0	0	0	0	0
<u>Overall...</u>	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>
I have a better understanding of what constitutes the effective questioning of students in a classroom setting.	0	0	0	0	0
I have greater knowledge of effective questioning techniques and practices that encourage student responses.	0	0	0	0	0
I have the knowledge to teach students how to ask questions effectively.	0	0	0	0	0
I was pleased with the overall quality of the QUILT professional development program.	0	0	0	0	0

Coachee Survey Spring 2009

Kentucky Center for Mathematics

Thank you for taking the time to complete this survey. You are being asked to complete this survey to evaluate the effectiveness of the professional development you have received through the Kentucky Center of Mathematics (KCM) regarding the Mathematics Coaching Program. This survey may or may not benefit you directly but your input could assist the KCM in improving future programs for teachers. There are no anticipated risks associated with your participation in this survey. Participants can withdraw from the survey at any time.

All responses to the survey will remain confidential. Data will be analyzed in aggregate and no individual responses will be reported. By completing this survey, you indicate your consent to participate in the study. This project has been approved by the Northern Kentucky University's Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants.

If you have any questions or concerns about your rights as a participant then we ask that you please contact Philip J. Moberg, Ph.D., Chair of the Institutional Review Board, Northern Kentucky University at (859) 572-1913/email: mobergp1@nku.edu. If you have questions about the evaluation work being undertaken please contact Kirsten Fleming, Ph.D., Executive Director of the Kentucky Center for Mathematics at (859)572-7690/email: kcm@nku.edu.

Confidential Identifier: Because we must match responses from this survey to those taken earlier in the year, we need an identification number which will allow researchers to match responses to the same individual. Therefore, we are asking that you provide the following information. All "identifiers" will be stripped from the final database; steps have been taken to prevent anyone from matching responses to an individual person.

The last 4 digits of your Social Security number

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Month of your birth (e.g., January = 01, March = 03, October = 10)

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Day of your birth (1st = 01, 15th = 15, 23rd = 23)

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In what year did you first become involved in the Mathematics Coaching Program at your school?

- First Year
- Second Year
- Third Year

Directions: Please read the following statements and choose which response most accurately describes your opinion.

1.) How often (on average) did you meet with your school's mathematics coach during the 2008-9 school year?

-
- Two or more times per week
 - Once a week
 - At least once every two weeks
 - At least once a month
 - Less than once a month
 - I did not meet with my coach
-

2. There are multiple roles and duties that coaches can perform for schools and teachers. Please review the following list of conversational topics that may have been a part of your interactions with your coach. Please indicate how often these topics were central to your interaction and how helpful those conversations were.

How often did you talk with your coach about this topic?			TOPICS You may have talked with your coach about:	How helpful were these conversations?			
<u>Never</u>	<u>Occasionally</u>	<u>Frequently</u>		<u>Helpful</u>	<u>Somewhat Helpful</u>	<u>Not Helpful</u>	<u>Not Applicable</u>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Classroom management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Instructional strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Assessment strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Mathematics content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us to what extent you agree or disagree with the following statements.

My mathematics coach has provided information, resources, or materials that ...	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>	<u>Does Not Apply</u>
	Increase my understanding of how students learn mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase my knowledge of effective instructional strategies for teaching mathematics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase my mathematical content knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase my knowledge of the Kentucky Core Content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allow me to better analyze student work for the purpose of identifying the mathematical skills the work represents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allow me to better <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. There are many techniques that your coach may have used during the school year. Please review the following list and state if your coach has use these during any of your meetings, as well as the degree to which the meeting was helpful to you as a mathematics teacher.

Did your coach use ...			Was it helpful ...		
<u>Yes</u>	<u>No</u>		<u>Helpful</u>	<u>Somewhat Helpful</u>	<u>Not Helpful</u>
<input type="radio"/>	<input type="radio"/>	a. Co-teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	b. Modeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	c. Planning discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	d. Data collection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	e. Reflective discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Did your mathematics coach provide professional development sessions for your school?

- Yes
- NO

11. If yes, please describe the professional development.

Please tell us to what extent you agree or disagree with the following statements.

12. The teachers in my building have been open to working with the mathematics coach.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

13. My mathematics coach receives appropriate administrative support.

- Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
-

14. What improvements would you recommend?

Thank You!

Coaches' Administrators Interview – Spring 2009

Kentucky Center for Mathematics

You are being asked to complete this survey to evaluate the effectiveness of the ***Mathematics Coaching Program*** that your district/school is participating in this school year. This survey may or may not benefit you directly but your input could assist the Kentucky Center for Mathematics in improving future professional development programs for teachers within the State of Kentucky. There are no anticipated risks associated with your participation in this survey. Participants can withdraw from the survey at any time.

All responses to the survey will remain confidential. Data will be analyzed in aggregate and no individual responses will be reported. By completing this survey, you indicate your consent to participate in the study. This project has been approved by the Northern Kentucky University's Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants.

If you have any questions, please call Jim Justice at (859) 572-7697 at KCM.

Please indicate the county where your school/district is located.

First I am going to ask you a group of questions about possible benefits that your school or district may or may not have experienced because of its involvement in the Coaching Program. Please tell me if you strongly agree, agree, are neutral, disagree, or strongly disagree with the following statements.

Because of my school's or district's involvement in the Mathematics Coaching Program... (If school then take out "district" and vice versa)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	No Opinion
Teachers in this school or district have a greater understanding of how students learn mathematics.	0	0	0	0	0	0
Teachers in this school or district have increased their knowledge of effective instructional strategies for teaching mathematics.	0	0	0	0	0	0
Teachers in this school or district have increased their mathematical content knowledge.	0	0	0	0	0	0

Because of my schools involvement in the Mathematics Coaching program...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	No Opinion
Teachers in this school or district have greater knowledge of the Kentucky Core Content.	0	0	0	0	0	0
Teachers in this school or district can better analyze student work for the purpose of identifying the mathematical skills the work represents.	0	0	0	0	0	0
Teachers in this school or district are better able to <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	0	0	0	0	0	0

The next section will deal with how the coaching program is implemented in your school.

7. We know that each school's program is different; tell me how your school's/district's mathematics coach *spends his/her day?* (*Probe for amount of time talking with coachees, other duties...*)

8. *Has your Mathematics coach provided professional development in your school/district?*

Yes

No

If yes, what has been the type of professional development provided by the Mathematics coach?

If not, do you see this as a role for the Mathematics coach in your school/district?

Please tell me if you strongly agree, agree, are neutral, disagree, or strongly disagree with the following statements.

The activities of the Mathematics Coach...	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>	<u>No Opinion</u>
Effectively support my school's/district's mathematics curriculum.	○	○	○	○	○	○
Are easy to implement in my school/district.	○	○	○	○	○	○

The next section will look at any benefits or difficulties that your school/district has experienced while participating in the math coaching program.

9. What benefits has your school/district experienced since implementing the Mathematics Coaching Program?

These can include benefits to students, teachers, benefits related to additional resources for the district, or the like.

12. How have other math teachers responded to having a mathematics coach in their school/district?

13. What have been the biggest challenges that your school/district has faced because of its involvement in the Mathematics Coaching Program? These challenges can involve issues with students, teachers, resources, or the like.

Please tell me if you strongly agree, agree, are neutral, disagree, or strongly disagree with the following statements.

The Mathematics Coaching Program as implemented in my school...						
	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>	<u>No Opinion</u>
Encourages learning that is in line with Kentucky Core Content.	0	0	0	0	0	0
Has improved the quality of mathematics teaching in my school/district.	0	0	0	0	0	0
I am pleased with the overall quality of the Mathematics Coaching Program.						
	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>	<u>No Opinion</u>
I am pleased with the overall quality of the Mathematics Coaching Program.	0	0	0	0	0	0
Other teachers in this district/school value the Mathematics Coaching Program.	0	0	0	0	0	0

The final set of questions that you will be asked refer to different types of support your school/district may or may not have been able to provide to mathematics coaches. Please tell me if you strongly agree, agree, are neutral, disagree, or strongly disagree with the following statements.

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>	<u>No Opinion</u>
This school or district has sufficient funds and resources to implement the Mathematics Coaching Program.	0	0	0	0	0	0
Mathematics Coaches have adequate time to prepare for their activities.	0	0	0	0	0	0
Budget issues make it difficult to provide Mathematics Coaches with the supplies they request.	0	0	0	0	0	0
Expenses related to granting release time for teachers to attend the Mathematics Coach's professional development sessions that occur throughout the year, are easily absorbed by the district.	0	0	0	0	0	0

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>	<u>No Opinion</u>
This district or school has adequate space to implement the Mathematics Coaching Program.	0	0	0	0	0	0
The Mathematics Coaching Program has been worth the resources (time, money) our school/district has committed to its implementation.	0	0	0	0	0	0

23a. Please explain your response to question 23. Why do you agree or disagree??

24. If you have just completed your second year with a Mathematics Coach, are you planning to complete an application to return to the Mathematics Coaching Program for Year 3?

- Yes
- No
- Not Applicable

25. If "NO", why are you/is your school not participating?

26. If you have completed your third year with a Mathematics Coach, will your coach continue with her/his coaching duties next year even though their formal training is complete?

- Yes
- No
- Not Applicable

27. If you answered "No" to question 26, what are some reasons for not continuing your school's/district's coaching initiative?

Appendix B: Mathematics Belief & Attitude Survey Data

Table B-1: Coaches, Cohort 1, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	70.0	30.0	.0	.0	.0	1.30 (.483)	10
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	.0	.0	.0	50.0	50.0	4.50 (.527)	10
Q3. I get frustrated if I don't understand what I am studying in mathematics.	.0	20.0	.0	80.0	.0	3.60 (.843)	10
Q4. I like doing mathematics.	.0	.0	.0	30.0	70.0	4.70 (.483)	10
Q5. I am very interested in mathematics.	.0	.0	.0	30.0	70.0	4.70 (.483)	10
Q6. I am able to learn mathematics well.	.0	.0	.0	60.0	40.0	4.40 (.516)	10
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	30.0	70.0	.0	.0	.0	1.70 (.483)	10
Q8. I am good at doing mathematics.	.0	.0	20.0	50.0	30.0	4.10 (.738)	10
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	.0	.0	30.0	50.0	20.0	3.90 (.738)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-2: Coaches, Cohort 1, Spring 2009 Math Beliefs Survey, Learning Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	60.0	20.0	10.0	10.0	.0	1.70 (1.059)	10
Q11. Learning mathematics mainly involves memorizing procedures.	40.0	50.0	.0	10.0	.0	1.80 (.919)	10
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	20.0	50.0	10.0	10.0	10.0	2.40 (1.265)	10
Q13. People learn mathematics by working together in cooperative groups.	.0	.0	20.0	60.0	20.0	4.00 (.667)	10
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	.0	.0	.0	60.0	40.0	4.40 (.516)	10
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	.0	.0	.0	30.0	70.0	4.70 (.483)	10
Q16. People learn mathematics by doing hands on activities.	.0	.0	10.0	50.0	40.0	4.30 (.675)	10
Q17. I know I understand mathematics when I get a good grade on an exam.	.0	10.0	50.0	30.0	10.0	3.40 (.843)	10
Q18. Anyone can learn mathematics.	.0	.0	10.0	50.0	40.0	4.30 (.675)	10
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	.0	.0	.0	40.0	60.0	4.60 (.516)	10
Q20. Making mistakes is part of learning mathematics.	.0	.0	.0	30.0	70.0	4.70 (.483)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-3: Coaches, Cohort 1, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	.0	70.0	20.0	10.0	.0	2.40 (.699)	10
Q22. Doing mathematics consists mainly of using rules.	20.0	50.0	10.0	20.0	.0	2.30 (1.059)	10
Q23. Getting the right answer is the most important part of mathematics.	20.0	50.0	20.0	10.0	.0	2.20 (.919)	10
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	20.0	80.0	.0	.0	.0	1.80 (.422)	10
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	50.0	40.0	.0	10.0	.0	1.70 (.949)	10
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	40.0	60.0	.0	.0	.0	1.60 (.516)	10
Q27. Solving mathematics problems frequently involves exploration.	.0	10.0	.0	50.0	40.0	4.20 (.919)	10
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	.0	40.0	40.0	20.0	.0	2.80 (.789)	10
Q29. Mathematics is an uncreative subject.	40.0	60.0	.0	.0	.0	1.60 (.516)	10
Q30. The most important part of mathematics is computation.	40.0	50.0	10.0	.0	.0	1.70 (.675)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-3: Coaches, Cohort 1, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q31. There are several ways to find the correct solution to a mathematics problem.	.0	.0	.0	30.0	70.0	4.70 (.483)	10
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	.0	50.0	40.0	10.0	.0	2.60 (.699)	10
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	20.0	20.0	40.0	20.0	.0	2.60 (1.075)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-4: Coaches, Cohort 2, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	28.6	57.1	.0	7.1	7.1	2.07 (1.141)	14
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	.0	.0	14.3	57.1	28.6	4.14 (.663)	14
Q3. I get frustrated if I don't understand what I am studying in mathematics.	.0	14.3	14.3	64.3	7.1	3.64 (.842)	14
Q4. I like doing mathematics.	.0	.0	.0	42.9	57.1	4.57 (.514)	14
Q5. I am very interested in mathematics.	.0	.0	7.1	28.6	64.3	4.57 (.646)	14
Q6. I am able to learn mathematics well.	.0	.0	14.3	57.1	28.6	4.14 (.663)	14
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	21.4	78.6	.0	.0	.0	1.79 (.426)	14
Q8. I am good at doing mathematics.	.0	.0	14.3	57.1	28.6	4.14 (.663)	14
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	.0	.0	7.1	71.4	21.4	4.14 (.535)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-5: Coaches, Cohort 2, Spring 2009 Math Beliefs Survey, Learning Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	42.9	35.7	21.4	.0	.0	1.79 (.802)	14
Q11. Learning mathematics mainly involves memorizing procedures.	28.6	50.0	21.4	.0	.0	1.93 (.730)	14
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	28.6	64.3	.0	7.1	.0	1.86 (.770)	14
Q13. People learn mathematics by working together in cooperative groups.	.0	.0	21.4	71.4	7.1	3.86 (.535)	14
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	.0	.0	.0	71.4	28.6	4.29 (.469)	14
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	.0	.0	.0	57.1	42.9	4.43 (.514)	14
Q16. People learn mathematics by doing hands on activities.	.0	.0	.0	71.4	28.6	4.29 (.469)	14
Q17. I know I understand mathematics when I get a good grade on an exam.	7.1	28.6	28.6	28.6	7.1	3.00 (1.109)	14
Q18. Anyone can learn mathematics.	.0	.0	.0	57.1	42.9	4.43 (.514)	14
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	.0	.0	.0	35.7	64.3	4.64 (.497)	14
Q20. Making mistakes is part of learning mathematics.	.0	.0	.0	42.9	57.1	4.57 (.514)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-6: Coaches, Cohort 2, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	14.3	71.4	14.3	.0	.0	2.00 (.555)	14
Q22. Doing mathematics consists mainly of using rules.	14.3	64.3	7.1	14.3	.0	2.21 (.893)	14
Q23. Getting the right answer is the most important part of mathematics.	14.3	50.0	28.6	7.1	.0	2.29 (.825)	14
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	35.7	57.1	7.1	.0	.0	1.71 (.611)	14
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	57.1	42.9	.0	.0	.0	1.43 (.514)	14
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	14.3	78.6	7.1	.0	.0	1.93 (.475)	14
Q27. Solving mathematics problems frequently involves exploration.	.0	.0	14.3	35.7	50.0	4.36 (.745)	14
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	.0	57.1	28.6	14.3	.0	2.57 (.756)	14
Q29. Mathematics is an uncreative subject.	28.6	71.4	.0	.0	.0	1.71 (.469)	14
Q30. The most important part of mathematics is computation.	7.1	85.7	.0	7.1	.0	2.07 (.616)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-6: Coaches, Cohort 2, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coaches who took the Spring 2009 Surveys)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
Q31. There are several ways to find the correct solution to a mathematics problem.	.0	.0	.0	30.8	69.2	4.69 (.480)	14
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	.0	57.1	35.7	7.1	.0	2.50 (.650)	14
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	14.3	42.9	42.9	.0	.0	2.29 (.726)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-7: Coaches, Cohort 1, Year 2006-9, Efficacy Teaching Mathematics
 (Only coaches who took Summer 2006, Spring 2007, Spring 2008, and Spring 2009 surveys)

	Summer 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q1. Often in mathematics, I do not understand the concept behind a problem.	20.00	2.60 (.89)	.00	1.60 (.55)	.00	1.40 (.55)	.00	1.20 (.45)	5
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	80.00	4.00 (1.22)	80.00	3.40 (1.34)	80.00	4.20 (.84)	100.00	4.60 (.55)	5
Q3. I get frustrated if I don't understand what I am studying in mathematics.	80.00	4.00 (.71)	100.00	4.00 (.00)	60.00	3.00 (1.41)	100.00	4.00 (.00)	5
Q4. I like doing mathematics.	80.00	4.40 (.89)	100.00	4.60 (.55)	80.00	4.40 (.89)	100.00	4.60 (.55)	5
Q5. I am very interested in mathematics.	100.00	4.60 (.55)	100.00	4.60 (.55)	100.00	4.60 (.55)	100.00	4.60 (.55)	5
Q6. I am able to learn mathematics well.	100.00	4.40 (.55)	80.00	3.80 (1.10)	60.00	4.00 (1.00)	100.00	4.60 (.55)	5
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	20.00	2.80 (1.10)	20.00	2.20 (1.10)	25.00	2.25 (1.26)	.00	1.60 (.55)	5
Q8. I am good at doing mathematics.	60.00	4.00 (1.00)	80.00	3.80 (1.10)	40.00	3.20 (1.48)	80.00	4.20 (.84)	5
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	100.00	4.00 (.00)	80.00	3.80 (1.10)	80.00	4.20 (.84)	60.00	3.80 (.84)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-8: Coaches, Cohort 1, Year 2006-9, Learning Mathematics
 (Only coaches who took Summer 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q10. People learn mathematics by listening to lecture.	20.00	1.80 (1.30)	.00	1.40 (.55)	.00	1.40 (.89)	20.00	1.80 (1.30)	5
Q11. Learning mathematics mainly involves memorizing procedures.	.00	1.60 (.55)	.00	1.40 (.55)	.00	1.80 (.45)	.00	1.60 (.55)	5
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	.00	2.00 (.00)	.00	1.80 (.84)	.00	1.80 (.45)	20.00	2.00 (1.22)	5
Q13. People learn mathematics by working together in cooperative groups.	100.00	4.00 (.00)	80.00	4.00 (.71)	100.00	4.00 (.00)	100.00	4.40 (.55)	5
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	100.00	4.20 (.45)	100.00	4.40 (.55)	100.00	4.20 (.45)	100.00	4.40 (.55)	5
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	100.00	4.80 (.45)	100.00	4.20 (.45)	100.00	4.60 (.55)	100.00	4.60 (.55)	5
Q16. People learn mathematics by doing hands on activities.	100.00	4.60 (.55)	100.00	4.20 (.45)	100.00	4.60 (.55)	100.00	4.60 (.55)	5
Q17. I know I understand mathematics when I get a good grade on an exam.	60.00	3.60 (.55)	60.00	3.60 (.55)	40.00	3.40 (.55)	40.00	3.40 (.55)	5
Q18. Anyone can learn mathematics.	100.00	4.20 (.45)	100.00	4.20 (.45)	80.00	4.00 (.71)	100.00	4.40 (.55)	5
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	100.00	4.60 (.55)	100.00	4.60 (.55)	100.00	4.80 (.45)	100.00	4.60 (.55)	5
Q20. Making mistakes is part of learning mathematics.	100.00	4.60 (.55)	100.00	4.40 (.55)	100.00	4.60 (.55)	100.00	4.80 (.45)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-9: Coaches, Cohort 1, Year 2006-9, The Nature of Mathematics
 (Only coaches who took Summer 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q21. To understand mathematics, students must solve many problems following examples provided.	60.00	4.00 (.84)	20.00	2.80 (.84)	20.00	2.60 (.89)	.00	2.20 (.45)	5
Q22. Doing mathematics consists mainly of using rules.	40.00	3.00 (1.00)	.00	2.00 (.00)	.00	2.00 (.00)	.00	1.80 (.45)	5
Q23. Getting the right answer is the most important part of mathematics.	20.00	2.60 (.89)	.00	2.00 (.71)	.00	1.80 (.84)	.00	2.00 (.71)	5
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	.00	2.00 (.00)	.00	2.00 (.00)	.00	1.80 (.45)	.00	1.80 (.45)	5
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	.00	1.80 (.45)	20.00	2.00 (1.22)	.00	2.00 (.71)	.00	1.40 (.55)	5
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	.00	2.00 (.00)	.00	1.60 (.55)	.00	1.60 (.55)	.00	1.60 (.55)	5
Q27. Solving mathematics problems frequently involves exploration.	100.00	4.60 (.55)	100.00	4.80 (.45)	100.00	4.40 (.55)	100.00	4.40 (.55)	5
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	60.00	3.80 (.84)	20.00	2.80 (.84)	40.00	2.80 (1.10)	.00	2.40 (.55)	5
Q29. Mathematics is an uncreative subject.	.00	1.40 (.55)	.00	1.60 (.55)	.00	1.60 (.55)	.00	1.60 (.55)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-9: Coaches, Cohort 1, Year 2006-9, The Nature of Mathematics, Continued...
 (Only coaches who took Summer 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q30. The most important part of mathematics is computation.	.00	2.20 (.45)	.00	2.00 (.00)	.00	1.80 (.45)	.00	1.40 (.55)	5
Q31. There are several ways to find the correct solution to a mathematics problem.	100.00	4.60 (.55)	100.00	4.60 (.55)	100.00	4.80 (.45)	100.00	4.80 (.45)	5
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	.00	2.00 (.00)	.00	2.00 (.00)	.00	2.00 (.71)	.00	2.60 (.55)	5
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	40.00	3.00 (1.00)	.00	2.40 (.55)	20.00	2.40 (.89)	.00	2.20 (.84)	5

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-10: Coaches, Cohort 2, Year 2007-9, Efficacy Teaching Mathematics
 (Only coaches who took Summer 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q1. Often in mathematics, I do not understand the concept behind a problem.	10.00	1.78 (.97)	.00	1.70 (.67)	20.00	2.20 (1.32)	10
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	90.00	3.78 (.67)	80.00	3.80 (.79)	100.00	4.30 (.48)	10
Q3. I get frustrated if I don't understand what I am studying in mathematics.	40.00	3.00 (1.32)	30.00	2.70 (.95)	70.00	3.60 (.70)	10
Q4. I like doing mathematics.	100.00	4.56 (.53)	100.00	4.50 (.53)	100.00	4.60 (.52)	10
Q5. I am very interested in mathematics.	100.00	4.67 (.50)	90.00	4.30 (.67)	90.00	4.50 (.71)	10
Q6. I am able to learn mathematics well.	90.00	4.11 (.33)	100.00	4.20 (.42)	80.00	4.10 (.74)	10
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	.00	1.67 (.50)	.00	1.90 (.32)	.00	1.80 (.42)	10
Q8. I am good at doing mathematics.	80.00	4.00 (.50)	90.00	4.10 (.57)	90.00	4.20 (.63)	10
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	80.00	4.00 (.50)	100.00	4.10 (.32)	90.00	4.10 (.57)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-11: Coaches, Cohort 2, Year 2007-9, Learning Mathematics
 (Only coaches who took Summer 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q10. People learn mathematics by listening to lecture.	.00	1.56 (.73)	.00	1.60 (.52)	.00	1.70 (.82)	10
Q11. Learning mathematics mainly involves memorizing procedures.	.00	1.78 (.67)	.00	2.10 (.57)	.00	1.90 (.74)	10
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	.00	1.89 (.78)	.00	1.80 (.42)	10.00	1.90 (.88)	10
Q13. People learn mathematics by working together in cooperative groups.	50.00	3.44 (.53)	90.00	4.00 (.47)	80.00	3.90 (.57)	10
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	100.00	4.11 (.33)	100.00	4.20 (.42)	100.00	4.20 (.42)	10
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	100.00	4.33 (.50)	100.00	4.50 (.53)	100.00	4.40 (.52)	10
Q16. People learn mathematics by doing hands on activities.	100.00	4.11 (.33)	100.00	4.30 (.48)	100.00	4.40 (.52)	10
Q17. I know I understand mathematics when I get a good grade on an exam.	70.00	3.67 (.87)	50.00	3.40 (1.17)	50.00	3.20 (1.23)	10
Q18. Anyone can learn mathematics.	100.00	4.11 (.33)	90.00	4.30 (.67)	100.00	4.50 (.53)	10
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	100.00	4.67 (.50)	100.00	4.60 (.52)	100.00	4.60 (.52)	10
Q20. Making mistakes is part of learning mathematics.	100.00	4.44 (.53)	100.00	4.50 (.53)	100.00	4.60 (.52)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-12: Coaches, Cohort 2, Year 2007-9, The Nature of Mathematics
 (Only coaches who took Summer 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q21. To understand mathematics, students must solve many problems following examples provided.	20.00	2.89 (.78)	20.00	2.50 (.85)	.00	1.90 (.57)	10
Q22. Doing mathematics consists mainly of using rules.	50.00	3.33 (1.22)	20.00	2.70 (.82)	10.00	2.10 (.88)	10
Q23. Getting the right answer is the most important part of mathematics.	.00	2.11 (.60)	10.00	2.30 (.67)	10.00	2.30 (.82)	10
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	10.00	2.00 (.87)	.00	1.80 (.42)	.00	1.70 (.67)	10
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	10.00	2.00 (.87)	.00	1.90 (.32)	.00	1.50 (.53)	10
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	.00	1.89 (.60)	.00	1.90 (.32)	.00	1.90 (.57)	10
Q27. Solving mathematics problems frequently involves exploration.	90.00	4.00 (.50)	90.00	4.20 (.63)	90.00	4.50 (.71)	10
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	30.00	3.11 (.78)	40.00	3.20 (.79)	10.00	2.40 (.70)	10
Q29. Mathematics is an uncreative subject.	10.00	1.89 (.93)	10.00	2.10 (.88)	.00	1.70 (.48)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-12: Coaches, Cohort 2, Year 2007-9, The Nature of Mathematics, Continued...
 (Only coaches who took Summer 2007, Spring 2008, and Spring 2009 Surveys)

	Summer 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q30. The most important part of mathematics is computation.	10.00	2.33 (.71)	.00	2.30 (.48)	10.00	2.10 (.74)	10
Q31. There are several ways to find the correct solution to a mathematics problem.	100.00	4.33 (.50)	100.00	4.40 (.52)	100.00	4.70 (.48)	10
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	20.00	2.78 (.83)	10.00	2.40 (.84)	10.00	2.50 (.71)	10
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	20.00	2.56 (1.01)	.00	2.00 (.67)	.00	2.40 (.70)	10

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-13: Coaches, Cohorts 1-2, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	.0	1.30 (.483)	10	14.3	2.07 (1.141)	14
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	100.0	4.50 (.527)	10	85.7	4.14 (.663)	14
Q3. I get frustrated if I don't understand what I am studying in mathematics.	80.0	3.60 (.843)	10	71.4	3.64 (.842)	14
Q4. I like doing mathematics.	100.0	4.70 (.483)	10	100.0	4.57 (.514)	14
Q5. I am very interested in mathematics.	100.0	4.70 (.483)	10	92.9	4.57 (.646)	14
Q6. I am able to learn mathematics well.	100.0	4.40 (.516)	10	85.7	4.14 (.663)	14
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	.0	1.70 (.483)	10	.0	1.79 (.426)	14
Q8. I am good at doing mathematics.	80.0	4.10 (.738)	10	85.7	4.14 (.663)	14
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	70.0	3.90 (.738)	10	92.9	4.14 (.535)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-14: Coaches, Cohorts 1-2, Spring 2009 Math Beliefs Survey, Learning Mathematics
(All coaches who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	10.0	1.70 (1.059)	10	.0	1.79 (.802)	14
Q11. Learning mathematics mainly involves memorizing procedures.	10.0	1.80 (.919)	10	.0	1.93 (.730)	14
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	20.0	2.40 (1.265)	10	7.1	1.86 (.770)	14
Q13. People learn mathematics by working together in cooperative groups.	80.0	4.00 (.667)	10	78.6	3.86 (.535)	14
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	100.0	4.40 (.516)	10	100.0	4.29 (.469)	14
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	100.0	4.70 (.483)	10	100.0	4.43 (.514)	14
Q16. People learn mathematics by doing hands on activities.	90.0	4.30 (.675)	10	100.0	4.29 (.469)	14
Q17. I know I understand mathematics when I get a good grade on an exam.	40.0	3.40 (.843)	10	35.7	3.00 (1.109)	14
Q18. Anyone can learn mathematics.	90.0	4.30 (.675)	10	100.0	4.43 (.514)	14
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	100.0	4.60 (.516)	10	100.0	4.64 (.497)	14
Q20. Making mistakes is part of learning mathematics.	100.0	4.70 (.483)	10	100.0	4.57 (.514)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-15: Coaches, Cohorts 1-2, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
 (All coaches who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	10.0	2.40 (.699)	10	.0	2.00 (.555)	14
Q22. Doing mathematics consists mainly of using rules.	20.0	2.30 (1.059)	10	14.3	2.21 (.893)	14
Q23. Getting the right answer is the most important part of mathematics.	10.0	2.20 (.919)	10	7.1	2.29 (.825)	14
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	.0	1.80 (.422)	10	.0	1.71 (.611)	14
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	10.0	1.70 (.949)	10	.0	1.43 (.514)	14
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	.0	1.60 (.516)	10	.0	1.93 (.475)	14
Q27. Solving mathematics problems frequently involves exploration.	90.0	4.20 (.919)	10	85.7	4.36 (.745)	14
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	20.0	2.80 (.789)	10	14.3	2.57 (.756)	14
Q29. Mathematics is an uncreative subject.	.0	1.60 (.516)	10	.0	1.71 (.469)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-15: Coaches, Cohorts 1-2, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coaches who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q30. The most important part of mathematics is computation.	.0	1.70 (.675)	10	7.1	2.07 (.616)	14
Q31. There are several ways to find the correct solution to a mathematics problem.	100.0	4.70 (.483)	10	100.0	4.69 (.480)	14
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	10.0	2.60 (.699)	10	7.1	2.50 (.650)	14
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	20.0	2.60 (1.075)	10	.0	2.29 (.726)	14

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-16: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	47.1	32.4	8.8	8.8	2.9	1.88 (1.094)	34
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	15.2	9.1	9.1	42.4	24.2	3.52 (1.372)	33
Q3. I get frustrated if I don't understand what I am studying in mathematics.	5.9	20.6	17.6	38.2	17.6	3.41 (1.184)	34
Q4. I like doing mathematics.	.0	11.8	14.7	23.5	50.0	4.12 (1.066)	34
Q5. I am very interested in mathematics.	.0	5.9	26.5	17.6	50.0	4.12 (1.008)	34
Q6. I am able to learn mathematics well.	.0	14.7	11.8	38.2	35.3	3.94 (1.043)	34
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	36.4	45.5	9.1	9.1	.0	1.91 (.914)	33
Q8. I am good at doing mathematics.	.0	17.6	17.6	35.3	29.4	3.76 (1.075)	34
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	.0	8.8	20.6	50.0	20.6	3.82 (.869)	34

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-17: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, Learning Mathematics
(All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	50.0	26.5	17.6	5.9	.0	1.79 (.946)	34
Q11. Learning mathematics mainly involves memorizing procedures.	15.2	27.3	30.3	27.3	.0	2.70 (1.045)	33
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	15.2	54.5	24.2	6.1	.0	2.21 (.781)	33
Q13. People learn mathematics by working together in cooperative groups.	2.9	2.9	41.2	44.1	8.8	3.53 (.825)	34
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	.0	.0	8.8	67.6	23.5	4.15 (.558)	34
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	.0	.0	8.8	50.0	41.2	4.32 (.638)	34
Q16. People learn mathematics by doing hands on activities.	.0	.0	8.8	50.0	41.2	4.32 (.638)	34
Q17. I know I understand mathematics when I get a good grade on an exam.	2.9	29.4	23.5	41.2	2.9	3.12 (.977)	34
Q18. Anyone can learn mathematics.	2.9	2.9	8.8	64.7	20.6	3.97 (.834)	34
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	.0	3.0	3.0	57.6	36.4	4.27 (.674)	33
Q20. Making mistakes is part of learning mathematics.	.0	.0	5.9	64.7	29.4	4.24 (.554)	34

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-18: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
(All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	2.9	32.4	23.5	35.3	5.9	3.09 (1.026)	34
Q22. Doing mathematics consists mainly of using rules.	.0	32.4	23.5	44.1	.0	3.12 (.880)	34
Q23. Getting the right answer is the most important part of mathematics.	6.1	57.6	30.3	3.0	3.0	2.39 (.788)	33
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	23.5	47.1	20.6	8.8	.0	2.15 (.892)	34
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	17.6	55.9	17.6	8.8	.0	2.18 (.834)	34
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	20.6	55.9	14.7	8.8	.0	2.12 (.844)	34
Q27. Solving mathematics problems frequently involves exploration.	.0	.0	2.9	73.5	23.5	4.21 (.479)	34
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	3.0	18.2	39.4	36.4	3.0	3.18 (.882)	33
Q29. Mathematics is an uncreative subject.	26.5	64.7	5.9	2.9	.0	1.85 (.657)	34
Q30. The most important part of mathematics is computation.	11.8	61.8	17.6	8.8	.0	2.24 (.781)	34

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-18: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q31. There are several ways to find the correct solution to a mathematics problem.	.0	2.9	.0	50.0	47.1	4.41 (.657)	34
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	8.8	47.1	20.6	23.5	.0	2.59 (.957)	34
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	11.8	26.5	14.7	44.1	2.9	3.00 (1.155)	34

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-19: Coachees, Cohort 2, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	51.7	30.0	10.0	5.0	3.3	1.78 (1.043)	60
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	6.7	16.7	5.0	51.7	20.0	3.62 (1.180)	60
Q3. I get frustrated if I don't understand what I am studying in mathematics.	11.7	20.0	21.7	40.0	6.7	3.10 (1.160)	60
Q4. I like doing mathematics.	3.3	10.0	15.0	18.3	53.3	4.08 (1.183)	60
Q5. I am very interested in mathematics.	3.3	13.3	10.0	31.7	41.7	3.95 (1.171)	60
Q6. I am able to learn mathematics well.	.0	11.7	6.7	51.7	30.0	4.00 (.921)	60
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	39.0	37.3	6.8	15.3	1.7	2.03 (1.114)	59
Q8. I am good at doing mathematics.	3.4	10.2	16.9	45.8	23.7	3.76 (1.040)	59
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	1.7	8.5	11.9	57.6	20.3	3.86 (.899)	59

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-20: Coachees, Cohort 2, Spring 2009 Math Beliefs Survey, Learning Mathematics
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	41.7	33.3	10.0	13.3	1.7	2.00 (1.105)	60
Q11. Learning mathematics mainly involves memorizing procedures.	15.0	45.0	18.3	20.0	1.7	2.48 (1.033)	60
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	15.3	54.2	11.9	11.9	6.8	2.41 (1.100)	59
Q13. People learn mathematics by working together in cooperative groups.	1.7	6.7	23.3	58.3	10.0	3.68 (.813)	60
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	.0	.0	6.7	66.7	26.7	4.20 (.546)	60
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	.0	.0	.0	56.7	43.3	4.43 (.500)	60
Q16. People learn mathematics by doing hands on activities.	.0	1.7	5.0	55.0	38.3	4.30 (.646)	60
Q17. I know I understand mathematics when I get a good grade on an exam.	3.3	11.7	30.0	43.3	11.7	3.48 (.965)	60
Q18. Anyone can learn mathematics.	.0	3.3	8.3	55.0	33.3	4.18 (.725)	60
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	.0	1.7	.0	45.0	53.3	4.50 (.597)	60
Q20. Making mistakes is part of learning mathematics.	.0	.0	1.7	43.3	55.0	4.53 (.536)	60

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-21: Coachees, Cohort 2, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
(All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	6.7	28.3	25.0	35.0	5.0	3.03 (1.057)	60
Q22. Doing mathematics consists mainly of using rules.	3.4	29.3	37.9	25.9	3.4	2.97 (.917)	58
Q23. Getting the right answer is the most important part of mathematics.	13.8	55.2	15.5	12.1	3.4	2.36 (.986)	58
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	18.3	53.3	15.0	8.3	5.0	2.28 (1.027)	60
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	13.3	58.3	11.7	13.3	3.3	2.35 (.988)	60
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	20.0	65.0	8.3	6.7	.0	2.02 (.748)	60
Q27. Solving mathematics problems frequently involves exploration.	.0	.0	5.0	70.0	25.0	4.20 (.514)	60
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	1.7	23.7	22.0	45.8	6.8	3.32 (.973)	59
Q29. Mathematics is an uncreative subject.	33.3	56.7	5.0	1.7	3.3	1.85 (.860)	60
Q30. The most important part of mathematics is computation.	3.4	56.9	19.0	19.0	1.7	2.59 (.899)	58

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-21: Coachees, Cohort 2, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q31. There are several ways to find the correct solution to a mathematics problem.	.0	1.7	.0	43.3	55.0	4.52 (.596)	60
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	8.3	53.3	25.0	13.3	.0	2.43 (.831)	60
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	.0	43.3	28.3	26.7	1.7	2.87 (.873)	60

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-22: Coachees, Cohort 3, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	46.2	42.3	3.8	3.8	3.8	1.77 (.992)	26
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	3.8	7.7	7.7	42.3	38.5	4.04 (1.076)	26
Q3. I get frustrated if I don't understand what I am studying in mathematics.	15.4	19.2	19.2	38.5	7.7	3.04 (1.248)	26
Q4. I like doing mathematics.	.0	7.7	3.8	34.6	53.8	4.35 (.892)	26
Q5. I am very interested in mathematics.	.0	7.7	11.5	26.9	53.8	4.27 (.962)	26
Q6. I am able to learn mathematics well.	.0	3.8	3.8	42.3	50.0	4.38 (.752)	26
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	30.8	50.0	19.2	.0	.0	1.88 (.711)	26
Q8. I am good at doing mathematics.	3.8	.0	11.5	61.5	23.1	4.00 (.849)	26
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	.0	3.8	7.7	57.7	30.8	4.15 (.732)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-23: Coachees, Cohort 3, Spring 2009 Math Beliefs Survey, Learning Mathematics
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	38.5	26.9	30.8	.0	3.8	2.04 (1.038)	26
Q11. Learning mathematics mainly involves memorizing procedures.	11.5	26.9	26.9	30.8	3.8	2.88 (1.107)	26
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	11.5	34.6	30.8	15.4	7.7	2.73 (1.116)	26
Q13. People learn mathematics by working together in cooperative groups.	.0	7.7	11.5	73.1	7.7	3.81 (.694)	26
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	.0	3.8	7.7	57.7	30.8	4.15 (.732)	26
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	.0	.0	15.4	50.0	34.6	4.19 (.694)	26
Q16. People learn mathematics by doing hands on activities.	3.8	.0	11.5	57.7	26.9	4.04 (.871)	26
Q17. I know I understand mathematics when I get a good grade on an exam.	3.8	.0	30.8	57.7	7.7	3.65 (.797)	26
Q18. Anyone can learn mathematics.	3.8	3.8	11.5	53.8	26.9	3.96 (.958)	26
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	.0	3.8	7.7	46.2	42.3	4.27 (.778)	26
Q20. Making mistakes is part of learning mathematics.	.0	.0	3.8	30.8	65.4	4.62 (.571)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-24: Coachees, Cohort 3, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
(All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	3.8	23.1	26.9	42.3	3.8	3.19 (.981)	26
Q22. Doing mathematics consists mainly of using rules.	3.8	19.2	23.1	53.8	.0	3.27 (.919)	26
Q23. Getting the right answer is the most important part of mathematics.	15.4	42.3	26.9	15.4	.0	2.42 (.945)	26
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	23.1	53.8	11.5	11.5	.0	2.12 (.909)	26
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	26.9	53.8	15.4	3.8	.0	1.96 (.774)	26
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	23.1	50.0	11.5	15.4	.0	2.19 (.981)	26
Q27. Solving mathematics problems frequently involves exploration.	.0	3.8	7.7	69.2	19.2	4.04 (.662)	26
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	3.8	15.4	26.9	53.8	.0	3.31 (.884)	26
Q29. Mathematics is an uncreative subject.	38.5	50.0	11.5	.0	.0	1.73 (.667)	26
Q30. The most important part of mathematics is computation.	15.4	23.1	38.5	23.1	.0	2.69 (1.011)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-24: Coachees, Cohort 3, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coachees who took the Spring 2009 Surveys)

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Mean Score (SD)	Count
Q31. There are several ways to find the correct solution to a mathematics problem.	.0	.0	3.8	46.2	50.0	4.46 (.582)	26
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	15.4	57.7	19.2	7.7	.0	2.19 (.801)	26
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	7.7	23.1	23.1	46.2	.0	3.08 (1.017)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-25: Coachees, Cohorts 1-3, Spring 2009 Math Beliefs Survey, Efficacy Teaching Mathematics
(All coachees who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2			Cohort 3		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q1. Often in mathematics, I do not understand the concept behind a problem.	11.8	1.88 (1.094)	34	8.3	1.78 (1.043)	60	7.7	1.77 (.992)	26
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	66.7	3.52 (1.372)	33	71.7	3.62 (1.180)	60	80.8	4.04 (1.076)	26
Q3. I get frustrated if I don't understand what I am studying in mathematics.	55.9	3.41 (1.184)	34	46.7	3.10 (1.160)	60	46.2	3.04 (1.248)	26
Q4. I like doing mathematics.	73.5	4.12 (1.066)	34	71.7	4.08 (1.183)	60	88.5	4.35 (.892)	26
Q5. I am very interested in mathematics.	67.6	4.12 (1.008)	34	73.3	3.95 (1.171)	60	80.8	4.27 (.962)	26
Q6. I am able to learn mathematics well.	73.5	3.94 (1.043)	34	81.7	4.00 (.921)	60	92.3	4.38 (.752)	26
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	9.1	1.91 (.914)	33	16.9	2.03 (1.114)	59	.0	1.88 (.711)	26
Q8. I am good at doing mathematics.	64.7	3.76 (1.075)	34	69.5	3.76 (1.040)	59	84.6	4.00 (.849)	26
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	70.6	3.82 (.869)	34	78.0	3.86 (.899)	59	88.5	4.15 (.732)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-26: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, Learning Mathematics
 (All coachees who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2			Cohort 3		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q10. People learn mathematics by listening to lecture.	5.9	1.79 (.946)	34	15.0	2.00 (1.105)	60	3.8	2.04 (1.038)	26
Q11. Learning mathematics mainly involves memorizing procedures.	27.3	2.70 (1.045)	33	21.7	2.48 (1.033)	60	34.6	2.88 (1.107)	26
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	6.1	2.21 (.781)	33	18.6	2.41 (1.100)	59	23.1	2.73 (1.116)	26
Q13. People learn mathematics by working together in cooperative groups.	52.9	3.53 (.825)	34	68.3	3.68 (.813)	60	80.8	3.81 (.694)	26
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	91.2	4.15 (.558)	34	93.3	4.20 (.546)	60	88.5	4.15 (.732)	26
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	91.2	4.32 (.638)	34	100.0	4.43 (.500)	60	84.6	4.19 (.694)	26
Q16. People learn mathematics by doing hands on activities.	91.2	4.32 (.638)	34	93.3	4.30 (.646)	60	84.6	4.04 (.871)	26
Q17. I know I understand mathematics when I get a good grade on an exam.	44.1	3.12 (.977)	34	55.0	3.48 (.965)	60	65.4	3.65 (.797)	26
Q18. Anyone can learn mathematics.	85.3	3.97 (.834)	34	88.3	4.18 (.725)	60	80.8	3.96 (.958)	26
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	93.9	4.27 (.674)	33	98.3	4.50 (.597)	60	88.5	4.27 (.778)	26
Q20. Making mistakes is part of learning mathematics.	94.1	4.24 (.554)	34	98.3	4.53 (.536)	60	96.2	4.62 (.571)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-27: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, The Nature of Mathematics
(All coachees who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2			Cohort 3		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q21. To understand mathematics, students must solve many problems following examples provided.	41.2	3.09 (1.026)	34	40.0	3.03 (1.057)	60	46.2	3.19 (.981)	26
Q22. Doing mathematics consists mainly of using rules.	44.1	3.12 (.880)	34	29.3	2.97 (.917)	58	53.8	3.27 (.919)	26
Q23. Getting the right answer is the most important part of mathematics.	6.1	2.39 (.788)	33	15.5	2.36 (.986)	58	15.4	2.42 (.945)	26
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	8.8	2.15 (.892)	34	13.3	2.28 (1.027)	60	11.5	2.12 (.909)	26
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	8.8	2.18 (.834)	34	16.7	2.35 (.988)	60	3.8	1.96 (.774)	26
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	8.8	2.12 (.844)	34	6.7	2.02 (.748)	60	15.4	2.19 (.981)	26
Q27. Solving mathematics problems frequently involves exploration.	97.1	4.21 (.479)	34	95.0	4.20 (.514)	60	88.5	4.04 (.662)	26
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	39.4	3.18 (.882)	33	52.5	3.32 (.973)	59	53.8	3.31 (.884)	26
Q29. Mathematics is an uncreative subject.	2.9	1.85 (.657)	34	5.0	1.85 (.860)	60	.0	1.73 (.667)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-27: Coachees, Cohort 1, Spring 2009 Math Beliefs Survey, The Nature of Mathematics, Continued...
 (All coachees who took the Spring 2009 Surveys)

	Cohort 1			Cohort 2			Cohort 3		
	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count	Strongly Agree or Agree %	Mean Score (SD)	Count
Q30. The most important part of mathematics is computation.	8.8	2.24 (.781)	34	20.7	2.59 (.899)	58	23.1	2.69 (1.011)	26
Q31. There are several ways to find the correct solution to a mathematics problem.	97.1	4.41 (.657)	34	98.3	4.52 (.596)	60	96.2	4.46 (.582)	26
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	23.5	2.59 (.957)	34	13.3	2.43 (.831)	60	7.7	2.19 (.801)	26
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	47.1	3.00 (1.155)	34	28.3	2.87 (.873)	60	46.2	3.08 (1.017)	26

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-28: Coachees, Cohort 1, Year 2006-9, Efficacy Teaching Mathematics
 (Only Coachees who took Fall 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q1. Often in mathematics, I do not understand the concept behind a problem.	27.27	2.45 (1.13)	9.09	2.00 (1.18)	.00	1.64 (.50)	9.09	2.09 (.94)	11
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	45.45	3.27 (1.19)	54.55	2.91 (1.58)	36.36	2.73 (1.19)	45.45	3.00 (1.34)	11
Q3. I get frustrated if I don't understand what I am studying in mathematics.	63.64	3.27 (1.27)	72.73	3.82 (.87)	54.55	3.36 (1.03)	54.55	3.45 (.93)	11
Q4. I like doing mathematics.	45.45	3.36 (1.50)	54.55	3.64 (1.36)	45.45	3.36 (1.36)	45.45	3.55 (1.29)	11
Q5. I am very interested in mathematics.	36.36	3.27 (1.35)	36.36	3.18 (1.40)	36.36	3.55 (1.04)	54.55	3.73 (1.19)	11
Q6. I am able to learn mathematics well.	54.55	3.45 (1.37)	54.55	3.45 (1.21)	72.73	3.73 (1.01)	63.64	3.64 (1.03)	11
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	45.45	2.82 (1.40)	27.27	2.55 (1.51)	45.45	2.91 (1.38)	18.18	2.27 (1.01)	11
Q8. I am good at doing mathematics.	54.55	3.27 (1.35)	45.45	2.91 (1.38)	54.55	3.36 (1.03)	54.55	3.55 (1.04)	11
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	45.45	3.36 (1.12)	63.64	3.36 (1.21)	36.36	3.18 (.98)	54.55	3.64 (.92)	11

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-29: Coachees, Cohort 1, Year 2006-9, Learning Mathematics
 (Only coachees who took Fall 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q10. People learn mathematics by listening to lecture.	.00	1.36 (.67)	.00	1.64 (.67)	.00	1.36 (.67)	.00	1.73 (.90)	11
Q11. Learning mathematics mainly involves memorizing procedures.	9.09	2.55 (.69)	45.45	3.09 (.94)	9.09	2.09 (.83)	.00	2.00 (.67)	11
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	.00	2.27 (.47)	9.09	2.27 (.79)	9.09	2.09 (.83)	10.00	2.10 (.74)	11
Q13. People learn mathematics by working together in cooperative groups.	63.64	3.64 (.81)	72.73	3.64 (.92)	63.64	3.91 (.83)	54.55	3.45 (.69)	11
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	81.82	3.73 (.65)	72.73	3.55 (.93)	90.91	4.00 (.45)	81.82	3.91 (.54)	11
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	81.82	4.09 (.70)	100.00	4.27 (.47)	100.00	4.45 (.52)	90.91	4.27 (.65)	11
Q16. People learn mathematics by doing hands on activities.	90.91	4.55 (.69)	90.91	4.27 (.90)	90.91	4.45 (.69)	90.91	4.55 (.69)	11
Q17. I know I understand mathematics when I get a good grade on an exam.	54.55	3.18 (1.08)	36.36	2.91 (.94)	9.09	2.55 (.82)	27.27	2.82 (.87)	11
Q18. Anyone can learn mathematics.	81.82	4.00 (.89)	72.73	3.82 (.60)	72.73	4.00 (.77)	90.91	3.91 (.70)	11
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	90.91	4.18 (.60)	100.00	4.45 (.52)	100.00	4.55 (.52)	100.00	4.45 (.52)	11
Q20. Making mistakes is part of learning mathematics.	100.00	4.64 (.50)	100.00	4.55 (.52)	100.00	4.73 (.47)	100.00	4.45 (.52)	11

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-30: Coachees, Cohort 1, Year 2006-9, The Nature of Mathematics
 (Only coachees who took Fall 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q21. To understand mathematics, students must solve many problems following examples provided.	18.18	2.73 (.79)	27.27	3.00 (.77)	36.36	3.00 (.89)	27.27	2.82 (.98)	11
Q22. Doing mathematics consists mainly of using rules.	27.27	3.00 (.77)	45.45	3.00 (1.00)	18.18	2.73 (.79)	36.36	3.09 (.83)	11
Q23. Getting the right answer is the most important part of mathematics.	.00	2.00 (.77)	9.09	2.45 (.82)	9.09	2.00 (.89)	.00	2.27 (.65)	11
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	9.09	1.82 (.87)	.00	2.00 (.00)	.00	1.91 (.54)	.00	1.91 (.70)	11
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	9.09	2.00 (.77)	.00	2.00 (.63)	9.09	2.36 (.81)	.00	2.09 (.70)	11
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	.00	2.27 (.65)	.00	2.18 (.75)	.00	2.18 (.40)	.00	2.09 (.83)	11
Q27. Solving mathematics problems frequently involves exploration.	81.82	4.18 (.75)	100.00	4.18 (.40)	100.00	4.45 (.52)	100.00	4.36 (.50)	11
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	54.55	3.27 (.90)	60.00	3.60 (.52)	36.36	3.09 (.83)	27.27	3.09 (.70)	11
Q29. Mathematics is an uncreative subject.	9.09	2.18 (.75)	.00	2.18 (.60)	.00	1.91 (.54)	.00	1.82 (.40)	11

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-30: Coachees, Cohort 1, Year 2006-9, The Nature of Mathematics, Continued...
 (Only coachees who took Fall 2006, Spring 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2006		Spring 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q30. The most important part of mathematics is computation.	.00	2.00 (.45)	.00	2.18 (.60)	.00	2.18 (.60)	.00	2.09 (.54)	11
Q31. There are several ways to find the correct solution to a mathematics problem.	90.91	4.18 (.60)	90.91	4.18 (.60)	100.00	4.36 (.50)	90.91	4.18 (.87)	11
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	27.27	2.73 (.90)	.00	2.27 (.47)	18.18	2.27 (.90)	9.09	2.36 (.81)	11
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	27.27	2.91 (.83)	40.00	3.30 (.67)	9.09	2.64 (.67)	36.36	3.00 (1.18)	11

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-31: Coachees, Cohort 2, Year 2007-9, Efficacy Teaching Mathematics
 (Only coachees who took Fall 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q1. Often in mathematics, I do not understand the concept behind a problem.	4.35	1.83 (.78)	8.70	1.96 (.93)	4.35	1.65 (.88)	23
Q2. I am able to remember most of the mathematics I learn in a course after the course is over.	69.57	3.65 (1.15)	86.96	4.00 (.85)	82.61	3.70 (1.11)	23
Q3. I get frustrated if I don't understand what I am studying in mathematics.	65.22	3.61 (1.12)	65.22	3.61 (.99)	47.83	3.30 (.93)	23
Q4. I like doing mathematics.	82.61	4.22 (.85)	91.30	4.30 (.76)	86.96	4.43 (.73)	23
Q5. I am very interested in mathematics.	69.57	3.87 (1.10)	73.91	4.13 (.92)	82.61	4.30 (.76)	23
Q6. I am able to learn mathematics well.	78.26	4.04 (.82)	69.57	3.91 (.95)	91.30	4.30 (.63)	23
Q7. If I cannot solve a mathematics problem within a few minutes, I will stop trying to solve it.	8.70	2.04 (.93)	17.39	2.35 (1.03)	8.70	2.04 (.98)	23
Q8. I am good at doing mathematics.	78.26	3.87 (.92)	69.57	3.78 (.95)	86.36	4.23 (.69)	23
Q9. I am able to successfully solve most mathematical problems with which I am confronted.	60.87	3.61 (.66)	65.22	3.74 (.96)	91.30	4.09 (.51)	23

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-32: Coachees, Cohort 2, Year 2007-9, Learning Mathematics
(Only coachees who took Fall 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q10. People learn mathematics by listening to lecture.	17.39	2.26 (1.18)	13.04	2.04 (1.15)	21.74	2.39 (1.27)	23
Q11. Learning mathematics mainly involves memorizing procedures.	21.74	2.57 (.95)	17.39	2.39 (.99)	27.27	2.68 (1.21)	23
Q12. In order to learn mathematics you need to learn a different method for each new type of problem.	17.39	2.43 (.84)	13.04	2.48 (.95)	21.74	2.65 (1.27)	23
Q13. People learn mathematics by working together in cooperative groups.	69.57	3.57 (.90)	47.83	3.35 (.98)	56.52	3.48 (1.04)	23
Q14. I try to understand the reasoning behind the procedures I use in mathematics.	91.30	4.17 (.58)	95.65	4.26 (.54)	95.65	4.22 (.52)	23
Q15. I know I understand mathematics when I can apply mathematics to a new situation.	95.65	4.13 (.81)	100.00	4.39 (.50)	100.00	4.39 (.50)	23
Q16. People learn mathematics by doing hands on activities.	82.61	4.13 (.81)	73.91	3.83 (.98)	82.61	4.22 (.85)	23
Q17. I know I understand mathematics when I get a good grade on an exam.	56.52	3.57 (1.04)	47.83	3.30 (1.15)	60.87	3.52 (1.12)	23
Q18. Anyone can learn mathematics.	78.26	4.04 (.82)	82.61	4.00 (.74)	91.30	4.26 (.75)	23
Q19. I know I understand mathematics when I can explain the mathematics to someone else.	100.00	4.39 (.50)	95.65	4.61 (.58)	100.00	4.52 (.51)	23
Q20. Making mistakes is part of learning mathematics.	100.00	4.48 (.51)	100.00	4.48 (.51)	100.00	4.48 (.51)	23

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-33: Coachees, Cohort 2, Year 2007-9, The Nature of Mathematics
(Only coachees who took Fall 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q21. To understand mathematics, students must solve many problems following examples provided.	47.83	3.39 (1.20)	34.78	3.13 (.87)	39.13	3.00 (.95)	23
Q22. Doing mathematics consists mainly of using rules.	34.78	3.22 (.90)	34.78	2.87 (1.01)	36.36	2.95 (.90)	23
Q23. Getting the right answer is the most important part of mathematics.	9.09	2.36 (.95)	8.70	2.39 (.89)	22.73	2.45 (1.14)	23
Q24. In mathematics, it is not possible to do a problem unless you've first been taught how to do one like it.	8.70	2.13 (.81)	4.35	2.00 (.74)	8.70	2.00 (.85)	23
Q25. Being able to successfully use a rule or formula in mathematics is more important than understanding why the rule or formula works.	26.09	2.57 (1.20)	8.70	2.09 (1.00)	13.04	2.17 (.89)	23
Q26. It is difficult to talk about mathematical ideas because all you can really do is explain how to do specific problems.	8.70	2.13 (.76)	4.35	2.13 (.76)	8.70	2.13 (.81)	23
Q27. Solving mathematics problems frequently involves exploration.	86.96	4.00 (.52)	95.65	4.13 (.46)	86.96	4.09 (.73)	23
Q28. Most mathematics problems are best solved by deciding on the type of problem and then using a previously learned solution for that type of problem.	59.09	3.45 (.96)	47.83	3.35 (.71)	52.17	3.22 (1.04)	23
Q29. Mathematics is an uncreative subject.	4.35	1.91 (.79)	.00	1.73 (.63)	4.35	1.83 (.72)	23

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table B-33: Coachees, Cohort 2, Year 2007-9, The Nature of Mathematics, Continued...
 (Only coachees who took Fall 2007, Spring 2008, and Spring 2009 Surveys)

	Fall 2007		Spring 2008		Spring 2009		Count
	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	Pct. Agree or Strongly Agree	Mean Score (SD)	
Q30. The most important part of mathematics is computation.	17.39	2.48 (.95)	17.39	2.57 (1.08)	21.74	2.43 (.95)	23
Q31. There are several ways to find the correct solution to a mathematics problem.	95.65	4.30 (.56)	95.65	4.39 (.58)	95.65	4.43 (.73)	23
Q32. Those who are good in mathematics can solve a mathematics problem within a few minutes.	13.04	2.65 (.83)	26.09	2.65 (1.07)	8.70	2.39 (.72)	23
Q33. Knowing step-by-step procedures is necessary to solve mathematical problems.	39.13	3.00 (.90)	31.82	2.82 (.91)	34.78	2.87 (1.06)	23

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Appendix C: Coach Overall Evaluation Survey & QUILT Survey Data

Table C-1: Coaches, Overall Evaluation Survey, Year 2007-9, Cohort 1
 (All coaches who took one or more of the following surveys: Spring 2007, Spring 2008 or Spring 2009)

	Spring 2007			Spring 2008			Spring 2009		
	Percent Agreement	Mean Score (SD)	Count	Percent Agreement	Mean Score (SD)	Count	Percent Agreement	Mean Score (SD)	Count
1. I have a greater understanding of how children learn mathematics.	80.56	4.11 (.95)	36	96.00	4.24 (.52)	25	87.50	4.50 (.76)	8
2. This training has increased my knowledge of effective instructional strategies for teaching mathematics.	91.67	4.28 (.81)	36	68.00	3.64 (.70)	25	87.50	4.75 (.71)	8
3. I have increased my mathematical content knowledge.	83.33	3.89 (.85)	36	72.00	3.80 (.82)	25	87.50	4.25 (.71)	8
4. I have greater knowledge of the Kentucky Core Content.	77.78	3.94 (.95)	36	76.00	3.80 (.87)	25	87.50	4.38 (.74)	8
5. I can better analyze student work for the purpose of identifying the mathematical skills the work represents.	88.89	4.06 (.89)	36	84.00	4.08 (.64)	25	87.50	4.25 (.71)	8
6. I am better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	88.89	4.22 (.90)	36	56.00	3.48 (.87)	25	87.50	4.38 (.74)	8
7. I am better able to coach others on the use of best practices for classroom instruction that support reasoning & problem solving skills.	88.89	4.28 (.91)	36	60.00	3.48 (.82)	25	100.00	4.50 (.53)	8
8. I am more proficient in using multiple methods for measuring student performance.	91.67	4.14 (.83)	36	95.83	4.12 (.45)	24	75.00	4.25 (.89)	8
9. I am better able to use assessment data to refine my teaching practices.	88.89	4.14 (.87)	36	80.00	3.92 (.70)	25	87.50	4.38 (.74)	8
17. I was pleased with the overall quality of this professional development course.	94.44	4.58 (.87)	36	96.00	4.36 (.57)	25	100.00	4.75 (.46)	8

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-2: Coaches, Overall Evaluation Survey, Year 2008-9, Cohort 2
 (All coaches who took one or more of the following surveys: Spring 2008 or Spring 2009)

	Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
1. I have a greater understanding of how children learn mathematics.	90.91	4.30 (.64)	33	93.33	4.33 (.62)	15
2. This training has increased my knowledge of effective instructional strategies for teaching mathematics.	90.91	4.27 (.72)	33	93.33	4.47 (.64)	15
3. I have increased my mathematical content knowledge.	65.62	3.84 (.88)	32	86.67	4.13 (.83)	15
4. I have greater knowledge of the Kentucky Core Content.	78.79	3.97 (.88)	33	73.33	3.93 (1.16)	15
5. I can better analyze student work for the purpose of identifying the mathematical skills the work represents.	75.76	4.00 (.79)	33	86.67	4.13 (.83)	15
6. I am better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	96.97	4.33 (.54)	33	93.33	4.40 (.63)	15
7. I am better able to coach others on the use of best practices for classroom instruction that support reasoning & problem solving skills.	90.91	4.27 (.63)	33	93.33	4.33 (.62)	15
8. I am more proficient in using multiple methods for measuring student performance.	90.91	4.21 (.60)	33	86.67	4.20 (.68)	15
9. I am better able to use assessment data to refine my teaching practices.	87.88	4.21 (.65)	33	100.00	4.33 (.49)	15
17. I was pleased with the overall quality of this professional development course.	84.85	4.24 (.90)	33	86.67	4.33 (.90)	15

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-3: Coaches, Overall Evaluation Survey, Year 2007-8, Cohort 1
Availability of and Access to Resources Necessary to Implement Coaching in Schools
(Includes all coaches who took one or more of the following surveys: Spring 2007, Spring 2008 or Spring 2009)

	Spring 2007			Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
34a. I receive the necessary support from my principal to implement the Mathematics Coaching Program in my school.	—	0.0	—	84.00	4.20 (.82)	25	100.00	4.62 (.52)	8
34b. I am given time to properly prepare for my role as a coach.	—	0.0	—	76.00	4.12 (.97)	25	100.00	4.50 (.53)	8
34c. My principal supports my attendance at the Mentor/Coaching professional development sessions that occur throughout the year.	—	0.0	—	96.00	4.52 (.59)	25	100.00	5.00 (.00)	8
34d. I am provided, by the school, proper space to conduct my duties as a mathematics coach in my school.	—	0.0	—	92.00	4.48 (.77)	25	100.00	4.88 (.35)	8
34e. Other teachers in my school value the coaching program.	—	0.0	—	70.83	3.83 (.87)	24	62.50	4.00 (1.20)	8
34f. The coaching program, as implemented in my school, has improved the quality of mathematics teaching in my school.	—	0.0	—	84.00	4.08 (.64)	25	100.00	4.38 (.52)	8

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-4: Coaches, Overall Evaluation Survey, Year 2008-9, Cohort 2
Availability of and Access to Resources Necessary to Implement Coaching in Schools
(Includes all coaches who took one or more of the following surveys: Spring 2008 or Spring 2009)

	Spring 2008			Spring 2009		
	Percent Strongly Agree or Agree	Mean Score (SD)	Count	Percent Strongly Agree or Agree	Mean Score (SD)	Count
34a. I receive the necessary support from my principal to implement the Mathematics Coaching Program in my school.	66.67	3.85 (1.20)	33	80.00	4.00 (.85)	15
34b. I am given time to properly prepare for my role as a coach.	78.79	4.03 (.98)	33	73.33	3.73 (.88)	15
34c. My principal supports my attendance at the Mentor/Coaching professional development sessions that occur throughout the year.	96.97	4.45 (.67)	33	100.00	4.53 (.52)	15
34d. I am provided, by the school, proper space to conduct my duties as a mathematics coach in my school.	93.94	4.24 (.75)	33	73.33	4.00 (1.07)	15
34e. Other teachers in my school value the coaching program.	66.67	3.70 (.81)	33	86.67	4.07 (.59)	15
34f. The coaching program, as implemented in my school, has improved the quality of mathematics teaching in my school.	75.76	3.91 (.80)	33	100.00	4.33 (.49)	15

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-5: Coach Overall Evaluation Survey, Spring 2009
How often do you use the KCM Website to do the following activities?
 (All Cohorts)

	Never %	Seldom %	Occasionally %	Frequently %	Count
Enter coaching log data.	27.27	45.45	18.18	9.09	22
Access information about training and/or applications.	.00	4.35	65.22	30.43	23
Find contact information for other personnel (e.g. fellow coach, RC or KCM staff).	.00	8.70	65.22	26.09	23
Access resources from the KCM Resources page.	.00	8.70	56.52	34.78	23
Access resources for teaching from the Coaching webpage.	.00	8.70	60.87	30.43	23
Visit the discussion forum.	17.39	34.78	39.13	8.70	23

Table C-6: Coach Overall Evaluation Survey, Spring 2009
How often do you use the KCM Website to do the following activities?
 (Cohort 1)

	Never %	Seldom %	Occasionally %	Frequently %	Count
Enter coaching log data.	25.00	37.50	25.00	12.50	8
Access information about training and/or applications.	.00	.00	50.00	50.00	8
Find contact information for other personnel (e.g. fellow coach, RC or KCM staff).	.00	12.50	37.50	50.00	8
Access resources from the KCM Resources page.	.00	12.50	50.00	37.50	8
Access resources for teaching from the Coaching webpage.	.00	12.50	37.50	50.00	8
Visit the discussion forum.	12.50	25.00	50.00	12.50	8

Table C-7: Coach Overall Evaluation Survey, Spring 2009
How often do you use the KCM Website to do the following activities?
 (Cohort 2)

	Never %	Seldom %	Occasionally %	Frequently %	Count
Enter coaching log data.	28.57	50.00	14.29	7.14	14
Access information about training and/or applications.	.00	6.67	73.33	20.00	15
Find contact information for other personnel (e.g. fellow coach, RC or KCM staff).	.00	6.67	80.00	13.33	15
Access resources from the KCM Resources page.	.00	6.67	60.00	33.33	15
Access resources for teaching from the Coaching webpage.	.00	6.67	73.33	20.00	15
Visit the discussion forum.	20.00	40.00	33.33	6.67	15

Table C-8: In the past year, approximately how many times have you contacted your visiting regional coordinator?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
0	0	0.0
1	1	4.8
2	4	19.0
3	1	4.8
4	2	9.5
5	4	19.0
6	2	9.5
8	3	14.3
10	3	14.3
15	1	4.8

n = 21

Table C-9: Overall, did the regional coordinator respond to you/your need in a timely manner?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
Yes	22	100
No	0	0.0
n = 22		

Table C-10: In the past year, how many times were you actually visited by your visiting regional coordinator?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
0	0	0.0
1	0	0.0
2	3	14.3
3	5	23.8
4	5	23.8
5	4	19.0
7	2	9.5
8	1	4.8
10	1	4.8
n = 21		

Table C-11: Were these visits helpful to you as a coach?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
No not at all helpful	0	0.0
Somewhat helpful	3	13.0
Yes helpful	20	87.0
n = 23		

Table C-12: What was the primary benefit (if any) of having the RC visit you?

- The primary benefit of having an RC this year was to provide emotional support. This was my first year to teach at the high school level in 17 years. I was like a first year teacher starting over. I had to learn technology and up-to-date teaching strategies.
- The Regional Coordinator gained a better knowledge of the district I work in. Plus she coached me through several problems I had had.
- Support, collaboration, shared resources
- Support, shared resources
- Validation of doing a good job. Looking over tapes and discussing.
- Support
- My RC did a wonderful job of providing materials and leadership and knowledge. We had an agenda each time and we worked through a book study with the Wright, Martland, Stafford, Stranger materials. She was great! I learned so much from her.
- She brought materials, resources, ideas, and she was a great listener.
- Practice coaching conversation Reflection for me on coaching
- A sounding board for concerns and ideas. RC also kept me connected to the happenings of coaching program and always tried to answer any questions or concerns I had.
- To observe coaching sessions.
- Practice my coaching skills; provide me with resources
- Ongoing training/ book study help with upcoming training Cognitive Coaching modeling updates from KCM
- Every school is different and many times you have to be in that school to understand what a coach is talking about. Visits provide this background.
- She provided support.
- She shared with us Reading Recovery materials that we could actually take back and work with teachers with.
- To toss around ideas about hosting/planning math nights
- She was able to tell me how to get the volume to work on my flip camera. She also gave me some suggestions on various ways to meet the needs of my coachees
- Companion, sounding board, I was able to ask her for help
- able to talk to someone who understood what I am supposed to be doing as a math coach
- She has a broader sense of our facilities, staff, and population. We have opportunities to discuss specific challenges and successes.

Table C-13: Other comments about the regional coordinators?

- My Regional Coordinator was a great resource for me. I enjoyed meeting with her and my administration was glad she came to visit. Just her presence made them realize how important math coaching is to the district.
- Planning future project beyond the capacity of RC
- My RC is GREAT!
- She organized a book study for all of the coaches in our region. We discussed issues, needs, growths, and the way kids learn math during our monthly math cohort meetings. She created relationships with everyone and facilitated great meetings.
- Excellent resource for me as a math coach.
- Very helpful and encouraging.
- It was helpful
- She is wonderful. WOW, what a great trainer. She is always willing to help. She is a wealth of knowledge.
- My RC has done a good job this year and has shared resources with me and the others. We are excited about a book study we are going to do this summer.
- She has done an excellent job as a new learning.
- The experience of my RC is invaluable. She is a person who is willing to share her personal experiences in a way that will help a person to improve their teaching skills.
- I love "XXXX"!
- "XXXX" was always very accessible, fun to talk to, and made me feel empowered
- "XXXX" is a very involved, supportive, and available RC for our "XXXX-ish" group. She exposes us to trends and programs first-hand and has assisted us this year in-depth understanding of the early stages of growth in numeracy.

Table C-14: Please estimate how many times in the past year you contacted a KCM staff member?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
0	0	0.0
1	0	0.0
2	1	4.3
3	5	21.7
4	3	13.0
5	5	21.7
6	2	8.7
8	1	4.3
10	5	21.7
20	1	4.3

n = 23

Table C-15: Overall, did the KCM staff member respond to you/your need in a timely manner?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
No	0	0.0
Yes	23	100.0

n = 23

Table C-16: Overall, was the KCM staff member helpful in responding to your needs as a coach?
(Spring 2009 Survey, All Coaches)

	Frequency	Percent
No not at all helpful	0	0.0
Somewhat helpful	1	4.3
Yes helpful	22	95.7

n = 23

Table C-17: Coaches' Comments Regarding KCM Staff

- KCM staff ALWAYS does an excellent job of supporting both their math coaches and Math Intervention Teachers!
- The staff at the Center of Mathematics are great.
- Outstanding
- Outstanding, supportive, understanding,
- Staff is always professional, informative and efficient.
- Positive!
- I have always been treated with respect when communicating with the staff from KCM. They are always to do whatever it takes to help me.
- I love KCM!

Table C-18: Were CENTRA meetings helpful in assisting you with your duties as a coach?
(Spring 2009 Survey, All Cohorts)

	Frequency	Percent
No not at all helpful	1	4.3
Somewhat helpful	7	30.4
Yes helpful	15	65.2

n = 23

Table C-19: Were CENTRA meetings helpful in assisting you with your duties as a coach?
(Spring 2009 Survey, Cohort 1)

	Frequency	Percent
No not at all helpful	0	0.0
Somewhat helpful	2	25.0
Yes helpful	6	75.0

n = 8

Table C-20: Were CENTRA meetings helpful in assisting you with your duties as a coach?
(Spring 2009 Survey, Cohort 2)

	Frequency	Percent
No not at all helpful	1	6.7
Somewhat helpful	5	33.3
Yes helpful	9	60.0

n = 15

Table C-21: What was the primary benefit, if any, of these CENTRA meetings?

- Getting feedback from other coaches regarding issues we all face in this position. It's helpful to learn what strategies they are using and what works. We are a great support to each other! We know what the other coaches are probably dealing with.
- This was a time for us as coaches to connect and help each other
- Support, collaboration, shared resources, new learning
- support, shared resources, current research
- Hearing other perspectives. Discussing articles and our thinking.
- Connection and sharing with other teachers with similar concerns and issues
- Touching base with other coaches, sharing resources...
- Staying connected with other math coaches across KY.
- Communicating with others and sharing ideas
- Staying connected to each other and sharing resources.
- Sharing resources.
- When I had "XXXX" as a leader "XXXX" would have excellent agendas prepared
- Ongoing training.
- Communication with others, learning what others are doing in their districts, continued updates about what we needed to do or have turned in
- They provided support that the coaches needed.
- Hearing what other coaches are doing, problems that are similar as mine that we could work out together.
- I feel that I was given the opportunity to talk to people who had similar experiences or who were willing to share ideas that would benefit me when I was working with teachers at my school.
- I was in a high school meeting at first and they weren't terribly helpful. I actually found them to be more annoying than anything else, but I loved "XXXX" and she made tried really hard and made my days better.
- We had coaching conversations moments before I had a meeting- it really helped. Sharing of resources
- Helpful in learning what middle schools are working with in math. I was the only "XXXX" member, which was not the most helpful situation, but was still a growth experience.

Table C-22: Coach Overall Evaluation Survey, Spring 2009
(Includes all coaches)

	With NO coachees %	With FEW coachees %	With SOME coachees %	With MOST coachees %	With ALL coachees %	Mean Score (SD)	Count
a. I was able to coach them during the planning of a lesson or event.	.00	30.43	34.78	21.74	13.04	3.17 (1.03)	23
b. I was able to observe the planned lesson or event.	.00	26.09	43.48	17.39	13.04	3.17 (.98)	23
c. I was able to coach them by reflecting about the lesson or event.	.00	21.74	39.13	30.43	8.70	3.26 (.92)	23

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-23: Coach Overall Evaluation Survey, Spring 2009
(Cohort 1)

	With NO coachees %	With FEW coachees %	With SOME coachees %	With MOST coachees %	With ALL coachees %	Mean Score (SD)	Count
a. I was able to coach them during the planning of a lesson or event.	.00	25.00	25.00	37.50	12.50	3.38 (1.06)	8
b. I was able to observe the planned lesson or event.	.00	25.00	37.50	25.00	12.50	3.25 (1.04)	8
c. I was able to coach them by reflecting about the lesson or event.	.00	25.00	37.50	25.00	12.50	3.25 (1.04)	8

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-24: Coach Overall Evaluation Survey, Spring 2009
(Cohort 2)

	With NO coachees %	With FEW coachees %	With SOME coachees %	With MOST coachees %	With ALL coachees %	Mean Score (SD)	Count
a. I was able to coach them during the planning of a lesson or event.	.00	33.33	40.00	13.33	13.33	3.07 (1.03)	15
b. I was able to observe the planned lesson or event.	.00	26.67	46.67	13.33	13.33	3.13 (.99)	15
c. I was able to coach them by reflecting about the lesson or event.	.00	20.00	40.00	33.33	6.67	3.27 (.88)	15

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-25: Coach Overall Evaluation Survey, Spring 2009
(All Cohorts)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Score (SD)	Count
a. At my school (or schools), we now have a well established community of coaches.	4.35	30.43	30.43	17.39	17.39	3.13 (1.18)	23
b. I have been able to offer effective professional development for my coachees.	.00	.00	.00	69.57	30.43	4.30 (.47)	23

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-26: Coach Overall Evaluation Survey, Spring 2009
(Cohort 1)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Score (SD)	Count
a. At my school (or schools), we now have a well established community of coaches.	.00	37.50	12.50	25.00	25.00	3.38 (1.30)	8
b. I have been able to offer effective professional development for my coachees.	.00	.00	.00	50.00	50.00	4.50 (.53)	8

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-27: Coach Overall Evaluation Survey, Spring 2009
(Cohort 2)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Score (SD)	Count
a. At my school (or schools), we now have a well established community of coaches.	6.67	26.67	40.00	13.33	13.33	3.00 (1.13)	15
b. I have been able to offer effective professional development for my coachees.	.00	.00	.00	80.00	20.00	4.20 (.41)	15

* Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-28: Will you continue with your coaching duties next year even though your formal training is complete?
(Spring 2009 Survey, Cohort 1)

	No %	Yes %	Count
Cohort 1	50.0	50.0	8
n = 8			

If “NO,” why are you/your school not participating?

- I am currently the assistant principal. The demands of the position have not allowed me to devote half of my time with just the math department. I will continue to use my coach training to help me work with all of my teachers in addition to the math.
- I am now an assistant principal and I will be expected to work or coach beyond the math department.
- lack of money.
- I will only have one more additional period during the day to coach. I will do what I can during my own time.

Table C-29: Are you planning to complete an application to return to the program for Year 3?
 (Spring 2009 Survey, Cohort 2)

	No %	Yes %	Count
Cohort 2	80.0	20.0	15
n = 15			

If “NO,” why are you/is your school not participating?

- I will be going back to the classroom, my position has been terminated.
- Increased requirements on coaches and not enough time to fulfill them
- The district is going a different direction next year. I will be an instructional coach in a single school working with all the teachers. Giving the math teachers half my time is not viable.
- Conditional, related to lack of funding at this time. CO hopes to maintain program...we'll see.

Table C-30: Coach QUILT Survey, Fall 2008
(Includes all Coaches in Cohort 2)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
I have a greater understanding of the relationship between questioning practices in the classroom and student learning outcomes.	.00	.00	11.76	70.59	17.65	4.06 (.56)	17
I can effectively communicate the characteristics of "effective classroom questioning" to teachers in my school/district.	.00	.00	.00	70.59	29.41	4.29 (.47)	17
I can identify teacher behaviors that limit effective classroom questioning.	.00	.00	.00	64.71	35.29	4.35 (.49)	17
I can communicate to other teachers how the asking of classroom questions affects a students' readiness to respond.	.00	.00	.00	64.71	35.29	4.35 (.49)	17
I am able to effectively use the verbal techniques for eliciting student responses to questions that were presented in this program.	.00	.00	17.65	70.59	11.76	3.94 (.56)	17
I am able to effectively use the nonverbal techniques for eliciting student responses to questions that were presented in this program.	.00	.00	.00	.00	.00	N/A	17
I have greater understanding of how my reaction to student responses affects their responding patterns.	.00	.00	.00	.00	.00	N/A	17
I can accurately assess my own personal questioning practices.	.00	.00	.00	64.71	35.29	4.35 (.49)	17

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-31: Coach QUILT Survey, Fall 2008
(Includes all Coaches in Cohort 2)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
I can accurately assess the personal questioning practices of other teachers.	.00	.00	.00	76.47	23.53	4.24 (.44)	17
I feel better prepared to function as a mathematics coach for my school.	.00	.00	11.76	52.94	35.29	4.24 (.66)	17
I will be able to relay the strategies presented in this professional development program to other teachers.	.00	.00	.00	64.71	35.29	4.35 (.49)	17
I have better understanding of what constitutes the effective questioning of students in a classroom setting.	.00	.00	11.76	64.71	23.53	4.12 (.60)	17
I have greater knowledge of effective questioning techniques and practices that encourage student responses.	.00	.00	11.76	58.82	29.41	4.18 (.64)	17
I have the knowledge to teach students how to ask questions effectively.	.00	5.88	17.65	64.71	11.76	3.82 (.73)	17
I was pleased with the overall quality of the QUILT professional development program.	.00	.00	.00	50.00	50.00	4.50 (.52)	17

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-32: Coach QUILT Survey, December 2008
(Includes all Coaches in Cohort 2)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
I have a greater understanding of the relationship between questioning practices in the classroom and student learning outcomes.	7.69	.00	.00	30.77	61.54	4.38 (1.12)	13
I can effectively communicate the characteristics of "effective classroom questioning" to teachers in my school/district.	7.69	.00	.00	53.85	38.46	4.15 (1.07)	13
I can identify teacher behaviors that limit effective classroom questioning.	7.69	.00	7.69	53.85	30.77	4.00 (1.08)	13
I can communicate to other teachers how the asking of classroom questions affects a students' readiness to respond.	.00	.00	.00	.00	.00	N/A	13
I am able to effectively use the verbal techniques for eliciting student responses to questions that were presented in this program.	.00	7.69	.00	46.15	46.15	4.31 (.85)	13
I am able to effectively use the nonverbal techniques for eliciting student responses to questions that were presented in this program.	.00	7.69	7.69	61.54	23.08	4.00 (.82)	13
I have greater understanding of how my reaction to student responses affects their responding patterns.	7.69	.00	.00	53.85	38.46	4.15 (1.07)	13
I can accurately assess my own personal questioning practices.	7.69	.00	.00	69.23	23.08	4.00 (1.00)	13

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-33: Coach QUILT Survey, December 2008
(Includes all Coaches in Cohort 2)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
I can accurately assess the personal questioning practices of other teachers.	7.69	.00	.00	61.54	30.77	4.08 (1.04)	13
I feel better prepared to function as a mathematics coach for my school.	7.69	.00	.00	61.54	30.77	4.08 (1.04)	13
I will be able to relay the strategies presented in this professional development program to other teachers.	7.69	.00	.00	46.15	46.15	4.23 (1.09)	13
I have better understanding of what constitutes the effective questioning of students in a classroom setting.	7.69	.00	.00	46.15	46.15	4.23 (1.09)	13
I have greater knowledge of effective questioning techniques and practices that encourage student responses.	7.69	.00	.00	38.46	53.85	4.31 (1.11)	13
I have the knowledge to teach students how to ask questions effectively.	7.69	.00	15.38	53.85	23.08	3.85 (1.07)	13
I was pleased with the overall quality of the QUILT professional development program.	7.69	.00	.00	38.46	53.85	4.31 (1.11)	13

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-34: Coach QUILT Survey, February 2009
(Includes all Coaches in Cohort 2)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
I have a greater understanding of the relationship between questioning practices in the classroom and student learning outcomes.	.00	.00	.00	60.00	40.00	4.40 (.55)	5
I can effectively communicate the characteristics of "effective classroom questioning" to teachers in my school/district.	.00	.00	20.00	60.00	20.00	4.00 (.71)	5
I can identify teacher behaviors that limit effective classroom questioning.	.00	.00	.00	100.00	.00	4.00 (.00)	5
I can communicate to other teachers how the asking of classroom questions affects a students' readiness to respond.	.00	.00	.00	.00	.00	N/A	5
I am able to effectively use the verbal techniques for eliciting student responses to questions that were presented in this program.	.00	.00	.00	80.00	20.00	4.20 (.45)	5
I am able to effectively use the nonverbal techniques for eliciting student responses to questions that were presented in this program.	.00	.00	20.00	60.00	20.00	4.00 (.71)	5
I have greater understanding of how my reaction to student responses affects their responding patterns.	.00	.00	.00	40.00	60.00	4.60 (.55)	5
I can accurately assess my own personal questioning practices.	.00	.00	.00	80.00	20.00	4.20 (.45)	5

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table C-35: Coach QUILT Survey, February 2009
 (Includes all Coaches in Cohort 2)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean Score (SD)	Count
I can accurately assess the personal questioning practices of other teachers.	.00	.00	.00	100.00	.00	4.00 (.00)	5
I feel better prepared to function as a mathematics coach for my school.	.00	.00	.00	80.00	20.00	4.20 (.45)	5
I will be able to relay the strategies presented in this professional development program to other teachers.	.00	.00	.00	80.00	20.00	4.20 (.45)	5
I have better understanding of what constitutes the effective questioning of students in a classroom setting	.00	.00	.00	80.00	20.00	4.20 (.45)	5
I have greater knowledge of effective questioning techniques and practices that encourage student responses.	.00	.00	.00	60.00	40.00	4.40 (.55)	5
I have the knowledge to teach students how to ask questions effectively.	.00	.00	40.00	40.00	20.00	3.80 (.84)	5
I was pleased with the overall quality of the QUILT professional development program.	.00	.00	.00	60.00	40.00	4.40 (.55)	5

*Mean Score is calculated on a 5 point scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Appendix D: Coachee Evaluation Survey Data

Table D-1: Coachees Evaluation Survey, Cohorts 1-3, Year 2008-9
(Spring 2009)

How often (on average) did you meet with your school's mathematics coach during the 2008-9 school year?	Percent	Count
I did not meet with my coach	0.0	0
Less than once a month	17.0	9
At least once a month	35.8	19
At least once every two weeks	18.9	10
Once a week	13.2	7
Two or more times a week	15.1	8
Total		53

Table D-2: Coachee Evaluation Survey, Cohort 1, Year 2008-9
(Spring 2009)

How often (on average) did you meet with your school's mathematics coach during the 2008-9 school year?	Percent	Count
I did not meet with my coach	.0	0
Less than once a month	11.1	2
At least once a month	50.0	9
At least once every two weeks	5.6	1
Once a week	16.7	3
Two or more times a week	16.7	3
Total		18

Table D-3: Coachee Evaluation Survey, Cohort 2, Year 2008-9
(Spring 2009)

How often (on average) did you meet with your school's mathematics coach during the 2008-9 school year?	Percent	Count
I did not meet with my coach	.0	0
Less than once a month	21.7	5
At least once a month	34.8	8
At least once every two weeks	26.1	6
Once a week	8.7	2
Two or more times a week	8.7	2
Total		23

Table D-4: Coachee Evaluation Survey, Cohort 3, Year 2008-9
(Spring 2009)

How often (on average) did you meet with your school's mathematics coach during the 2008-9 school year?	Percent	Count
I did not meet with my coach	.0	0
Less than once a month	16.7	2
At least once a month	16.7	2
At least once every two weeks	25.0	3
Once a week	16.7	2
Two or more times a week	25.0	3
Total		12

Table D-5: Coachee Evaluation Survey, Cohorts 1-3, Year 2008-9
(Spring 2009)

How often did you talk with your coach about this topic?	How helpful were these conversations?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Classroom Management					
Never	.0	.0	.0	100.0	19
Occasionally	4.8	23.8	71.4	.0	21
Frequently	20.0	.0	80.0	.0	5
Instructional Strategies					
Never	.0	.0	50.0	50.0	2
Occasionally	4.0	40.0	56.0	.0	25
Frequently	.0	10.5	89.5	.0	19
Assessment Strategies					
Never	.0	.0	.0	100.0	1
Occasionally	.0	47.6	52.4	.0	21
Frequently	4.3	4.3	91.3	.0	23
Mathematics Content					
Never	33.3	.0	.0	66.7	3
Occasionally	5.0	45.0	50.0	.0	20
Frequently	.0	4.5	95.5	.0	22

Table D-6: Coachee Evaluation Survey, Cohort 1, Year 2008-9
(Spring 2009)

How often did you talk with your coach about this topic?	How helpful were these conversations?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Classroom Management					
Never	.0	.0	.0	100.0	9
Occasionally	.0	28.6	71.4	.0	7
Frequently	.0	.0	.0	.0	0
Instructional Strategies					
Never	.0	.0	50.0	50.0	2
Occasionally	.0	22.2	77.8	.0	9
Frequently	.0	.0	100.0	.0	5
Assessment Strategies					
Never	.0	.0	.0	.0	0
Occasionally	.0	28.6	71.4	.0	7
Frequently	.0	11.1	88.9	.0	9
Mathematics Content					
Never	.0	.0	.0	.0	0
Occasionally	.0	42.9	57.1	.0	7
Frequently	.0	.0	100.0	.0	9

Table D-7: Coachee Evaluation Survey, Cohort 2, Year 2008-9
(Spring 2009)

How often did you talk with your coach about this topic?	How helpful were these conversations?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Classroom Management					
Never	.0	.0	.0	100.0	6
Occasionally	11.1	11.1	77.8	.0	9
Frequently	50.0	.0	50.0	.0	2
Instructional Strategies					
Never	.0	.0	.0	.0	0
Occasionally	8.3	50.0	41.7	.0	12
Frequently	.0	16.7	83.3	.0	6
Assessment Strategies					
Never	.0	.0	.0	.0	0
Occasionally	.0	55.6	44.4	.0	9
Frequently	12.5	.0	87.5	.0	8
Mathematics Content					
Never	.0	.0	.0	100.0	1
Occasionally	10.0	50.0	40.0	.0	10
Frequently	.0	16.7	83.3	.0	6

Table D-8: Coachee Evaluation Survey, Cohort 3, Year 2008-9
(Spring 2009)

How often did you talk with your coach about this topic?	How helpful were these conversations?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Classroom Management					
Never	.0	.0	.0	100.0	4
Occasionally	.0	40.0	60.0	.0	5
Frequently	.0	.0	100.0	.0	3
Instructional Strategies					
Never	.0	.0	.0	.0	0
Occasionally	.0	50.0	50.0	.0	4
Frequently	.0	12.5	87.5	.0	8
Assessment Strategies					
Never	.0	.0	.0	100.0	1
Occasionally	.0	60.0	40.0	.0	5
Frequently	.0	.0	100.0	.0	6
Mathematics Content					
Never	50.0	.0	.0	50.0	2
Occasionally	.0	33.3	66.7	.0	3
Frequently	.0	.0	100.0	.0	7

Table D-9: Coachee Evaluation Survey, Cohorts 1-3, Year 2008-9
My mathematics coach has provided information, resources, or materials that ...
 (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
Increase my understanding of how students learn mathematics.	1.89	.00	18.87	60.38	18.87	53
Increase my knowledge of effective instructional strategies for teaching mathematics.	.00	5.66	9.43	54.72	30.19	53
Increase my mathematical content knowledge.	5.66	7.55	26.42	41.51	18.87	53
Increase my knowledge of the Kentucky Core Content.	1.89	11.32	13.21	45.28	28.30	53
Allow me to better analyze student work for the purpose of identifying the mathematical skills the work represents.	3.77	7.55	16.98	47.17	24.53	53
Allow me to better <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	1.89	3.77	13.21	52.83	28.30	53

Table D-10: Coachee Evaluation Survey, Cohort 1, Year 2008-9
My mathematics coach has provided information, resources, or materials that ...
 (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
Increase my understanding of how students learn mathematics.	.00	.00	5.56	77.78	16.67	18
Increase my knowledge of effective instructional strategies for teaching mathematics.	.00	.00	16.67	50.00	33.33	18
Increase my mathematical content knowledge.	.00	5.56	22.22	55.56	16.67	18
Increase my knowledge of the Kentucky Core Content.	.00	5.56	11.11	55.56	27.78	18
Allow me to better analyze student work for the purpose of identifying the mathematical skills the work represents.	.00	5.56	5.56	61.11	27.78	18
Allow me to better <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	.00	.00	11.11	66.67	22.22	18

Table D-11: Coachee Evaluation Survey, Cohort 2, Year 2008-9
My mathematics coach has provided information, resources, or materials that ...
 (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
Increase my understanding of how students learn mathematics.	4.35	0.00	34.78	47.83	13.04	23
Increase my knowledge of effective instructional strategies for teaching mathematics.	.00	13.04	8.70	60.87	17.39	23
Increase my mathematical content knowledge.	13.04	13.04	26.09	39.13	8.70	23
Increase my knowledge of the Kentucky Core Content.	4.35	21.74	17.39	43.48	13.04	23
Allow me to better analyze student work for the purpose of identifying the mathematical skills the work represents.	8.70	13.04	21.74	39.13	17.39	23
Allow me to better <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	4.35	8.70	17.39	52.17	17.39	23

Table D-12: Coachee Evaluation Survey, Cohort 3, Year 2008-9
My mathematics coach has provided information, resources, or materials that ...
 (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
Increase my understanding of how students learn mathematics.	.00	.00	8.33	58.33	33.33	12
Increase my knowledge of effective instructional strategies for teaching mathematics.	.00	.00	.00	50.00	50.00	12
Increase my mathematical content knowledge.	.00	.00	33.33	25.00	41.67	12
Increase my knowledge of the Kentucky Core Content.	.00	.00	8.33	33.33	58.33	12
Allow me to better analyze student work for the purpose of identifying the mathematical skills the work represents.	.00	.00	25.00	41.67	33.33	12
Allow me to better <u>identify</u> best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	.00	.00	8.33	33.33	58.33	12

Table D-13: Coachees Evaluation Survey, Cohorts 1-3, Year 2008-9
(Spring 2009)

Did your coach use any of the following techniques?	How helpful were these techniques?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Co-teaching					
Never	.0	.0	5.3	94.7	19
Occasionally	4.8	23.8	71.4	.0	21
Frequently	.0	.0	100.0	.0	3
Modeling					
Never	7.7	.0	.0	92.3	13
Occasionally	8.3	25.0	66.7	.0	24
Frequently	.0	.0	100.0	.0	7
Planning Discussions					
Never	20.0	.0	20.0	60.0	5
Occasionally	4.0	52.0	44.0	.0	25
Frequently	.0	6.2	93.8	.0	16
Data Collection					
Never	.0	.0	25.0	75.0	4
Occasionally	9.5	42.9	47.6	.0	21
Frequently	5.3	10.5	84.2	.0	19
Reflective Discussions					
Never	20.0	.0	.0	80.0	5
Occasionally	4.0	52.0	44.0	.0	25
Frequently	.0	.0	100.0	.0	15

Table D-14: Coachees Evaluation Survey, Cohort 1, Year 2008-9
(Spring 2009)

Did your coach use any of the following techniques?	How helpful were these techniques?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Co-teaching					
Never	0.0	.0	.0	100.0	4
Occasionally	0.0	22.2	77.8	.0	9
Frequently	0.0	.0	100.0	.0	1
Modeling					
Never	20.0	.0	.0	80.0	5
Occasionally	14.3	28.6	57.1	.0	7
Frequently	.0	.0	100.0	.0	3
Planning Discussions					
Never	50.0	.0	50.0	0.0	2
Occasionally	.0	55.6	44.4	0.0	9
Frequently	.0	.0	100.0	0.0	4
Data Collection					
Never	.0	.0	100.0	0.0	1
Occasionally	14.3	28.6	57.1	0.0	7
Frequently	16.7	.0	83.3	0.0	6
Reflective Discussions					
Never	.0	.0	.0	100.0	1
Occasionally	14.3	42.9	42.9	.0	7
Frequently	.0	.0	100.0	.0	6

Table D-15: Coachee Evaluation Survey, Cohort 2, Year 2008-9
(Spring 2009)

Did your coach use any of the following techniques?	How helpful were these techniques?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Co-teaching					
Never	.0	.0	.0	100.0	9
Occasionally	14.3	28.6	57.1	.0	7
Frequently	.0	.0	100.0	.0	2
Modeling					
Never	.0	.0	.0	100.0	7
Occasionally	12.5	25.0	62.5	.0	8
Frequently	.0	.0	100.0	.0	2
Planning Discussions					
Never	.0	.0	.0	100.0	2
Occasionally	7.1	50.0	42.9	.0	14
Frequently	.0	.0	100.0	.0	3
Data Collection					
Never	.0	.0	.0	100.0	2
Occasionally	11.1	55.6	33.3	.0	8
Frequently	.0	14.3	85.7	.0	7
Reflective Discussions					
Never	0.0	.0	.0	100.0	2
Occasionally	0.0	60.0	40.0	.0	15
Frequently	0.0	.0	100.0	.0	2

Table D-16: Coachee Evaluation Survey, Cohort 3, Year 2008-9
(Spring 2009)

Did your coach use any of the following techniques?	How helpful were these techniques?				Count
	Not Helpful %	Somewhat Helpful %	Helpful %	Not Applicable %	
Co-teaching					
Never	0.0	.0	16.7	83.3	6
Occasionally	0.0	20.0	80.0	.0	5
Frequently	0.0	0.0	0.0	0.0	0
Modeling					
Never	0.0	.0	.0	100.0	1
Occasionally	0.0	22.2	77.8	.0	9
Frequently	0.0	.0	100.0	.0	2
Planning Discussions					
Never	0.0	.0	.0	100.0	1
Occasionally	0.0	50.0	50.0	.0	2
Frequently	0.0	11.1	88.9	.0	9
Data Collection					
Never	0.0	.0	.0	100.0	1
Occasionally	0.0	40.0	60.0	.0	5
Frequently	0.0	16.7	83.3	.0	6
Reflective Discussions					
Never	50.0	.0	.0	50.0	2
Occasionally	.0	33.3	66.7	.0	3
Frequently	.0	.0	100.0	.0	7

Table D-17: Coachee Evaluation Survey, Cohorts 1-3, Year 2008-9
(Spring 2009)

10. Did your mathematics coach provide professional learning opportunities for your school?	Count	Percent
No	14	27.5
Yes	37	72.5
Total	51	100.0

11. If yes, please describe these sessions.

- professional developments
- math night, math make and take, math text book adoption
- She conducted Professional Development sessions that showed different teaching styles and new approaches to teaching the same content.
- Too numerous to discuss here over the last 2-3 years.
- During Department meetings and professional development sessions.
- Clickers, and technology
- Carnegie Math Tutor
- Instructional Strategies
- KCM numeracy Conference
- "XXXX" did a professional development in questioning strategies and made other teachers aware of other pd opportunities.
- assisted us in writing our unit plans with I can statements
- We worked together with other grade levels to make sure there were no "holes" in the program we were using. We spent the day finding many useful resources.
- We were allowed PD time to analyze mid-term test results. We then formulated "start up" questions out of the ones a high percentage of the students missed.
- We had training on the Blackboard and using different types of assessment tools.
- During faculty meetings, before the school started and a math coaches meeting, our math coaches provided us with insightful best practices to use with math instruction. They modeled how to use ideas presented in Everyday Math.
- They offered a book group.
- problem solving professional development
- Math coaches presented at some of the Faculty Conferences this year.
- These were in the form of professional development before the school year and during.
- Presentations during faculty conferences.
- My Math coach was involved in the presentation of different sessions when providing information to the staff.
- Training sessions
- introduction to new math series
- Book talk
- I do not know.
- These were monthly, after school, math department meetings. There were also many resources made available to us.
- Prof. development and resource suggestions to use in my classroom
- they were school wide and incorporated into our staff meetings.
- Faculty meeting discussions
- Meetings with instructional strategies
- We were given lessons, participated in lessons that could be used in the classroom, given resource books to use in the classroom

Table D-18: Coachee Evaluation Survey, Cohorts 1-3, Year 2008-9
(Spring 2009)

Teachers in my building have been open to working with the mathematics coach	Count	Percent
Strongly Disagree	1	1.9
Disagree	3	5.8
Neutral	5	9.6
Agree	24	46.2
Strongly Agree	19	36.5
Total	52	100.0

Table D-19: Coachee Evaluation Survey, Cohort 1, Year 2008-9
(Spring 2009)

Teachers in my building have been open to working with the mathematics coach	Count	Percent
Strongly Disagree	0	0.0
Disagree	2	11.1
Neutral	0	0.0
Agree	7	38.9
Strongly Agree	9	50.0
Total	18	100.0

Table D-20: Coachee Evaluation Survey, Cohort 2, Year 2008-9
(Spring 2009)

Teachers in my building have been open to working with the mathematics coach	Count	Percent
Strongly Disagree	0	0.0
Disagree	2	11.1
Neutral	0	0.0
Agree	7	38.9
Strongly Agree	9	50.0
Total	18	100.0

Table D-21: Coachee Evaluation Survey, Cohort 3, Year 2008-9
(Spring 2009)

Teachers in my building have been open to working with the mathematics coach	Count	Percent
Strongly Disagree	0	0.0
Disagree	0	0.0
Neutral	2	18.2
Agree	6	54.5
Strongly Agree	3	27.3
Total	11	100.0

Table D-22: Coachee Evaluation Survey, Cohorts 1-2, Year 2008-9
(Spring 2009)

My mathematics coach receives appropriate administrative support	Count	Percent
Strongly Disagree	0	0.0
Disagree	2	3.8
Neutral	6	11.3
Agree	22	41.5
Strongly Agree	23	43.4
Total	53	100.0

Table D-23: Coachee Evaluation Survey, Cohort 1, Year 2008-9
(Spring 2009)

My mathematics coach receives appropriate administrative support	Count	Percent
Strongly Disagree	0	0.0
Disagree	1	5.6
Neutral	0	0.0
Agree	8	44.4
Strongly Agree	9	50.0
Total	18	100.0

Table D-24: Coachee Evaluation Survey, Cohort 2, Year 2008-9
(Spring 2009)

My mathematics coach receives appropriate administrative support	Count	Percent
Strongly Disagree	0	0.0
Disagree	1	5.6
Neutral	0	0.0
Agree	8	44.4
Strongly Agree	9	50.0
Total	18	100.0

Table D-25: Coachee Evaluation Survey, Cohort 3, Year 2008-9
(Spring 2009)

My mathematics coach receives appropriate administrative support	Count	Percent
Strongly Disagree	0	0.0
Disagree	0	0.0
Neutral	2	16.7
Agree	7	58.3
Strongly Agree	3	25.0
Total	12	100.0

What improvements would you recommend?

- None
- Analyzing test scores as a group was always helpful for me, so I would like to see more of that, if at all possible.
- That coach not pulled away from coaching duties. many times this year coaching was backdoor for other things
- More time to meet, talk, and discuss strategies.
- None
- That our mathematics coach not be used for building assessment that has nothing to do with what I think a math coach duties should be
- None
- Remove other responsibilities from her shoulders so that she can dedicate more time to coaching.
- None at this time.
- I would really like to see the mathematics ideas and strategies broken down into primary and intermediate grades. Especially when presenting thinking strategies while teaching math.
- More time in each classroom.
- "XXXX" was very helpful in a wide variety of ways. I hope we can keep her as coach!
- None. I do not have any suggestions.
- It would be nice if the math coach could help with students.
- None
- Although the coaching program may have its benefits it is truly the character and personality of the coach that makes it a success. A coach that lacks the social skills to work well with others or to motivate others to work with them; viewing the position as one of an evaluator/administrator is not a help to any teacher. This could truly be a worthwhile position if only it was viewed as a service to teachers rather than one of "my authority over yours".

Appendix E: Coach Administrators Survey Data

Table E-1: Cohorts 1-2. Because of my school's involvement in the Mathematics Coaching Program ... (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
1. Teachers in this school or district have a greater understanding of how students learn mathematics.	0.0	0.0	0.0	65.2	34.8	23
2. Teachers in this school or district have increased their knowledge of effective instructional strategies for teaching mathematics.	0.0	0.0	0.0	56.5	43.5	23
3. Teachers in this school or district have increased their mathematical content knowledge.	0.0	0.0	4.3	56.5	39.1	23
4. Teachers in this school or district have greater knowledge of the Kentucky Core Content.	0.0	0.0	8.7	65.2	26.1	23
5. Teachers in this school or district can better analyze student work for the purpose of identifying the mathematical skills the work represents.	0.0	0.0	8.7	69.6	21.7	23
6. Teachers in this school or district are better able to identify best practices for classroom instruction that support teaching reasoning and problem solving skills to students.	0.0	0.0	0.0	63.6	36.4	22

Table E-2: Cohorts 1-2. The activities of the Mathematics Coach... (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
9. Effectively support my school's/district's mathematics curriculum.	4.3	0.0	0.0	30.4	65.2	23
10. Are easy to implement in my school/district.	4.3	0.0	0.0	43.5	52.2	23

Table E-3. “What benefits has your school/district experienced since implementing the Mathematics Coaching Program? These can include benefits to students, teachers, benefits related to additional resources for the district, or the like” (Cohorts 1-2, Spring 2009)

- Our coach has been placed on District curriculum committees and assisted with the selection of district-supported textbooks.
- Teachers have been given hands on approaches to improving student instruction. Technology has been increased in classrooms.
- Better instruction from teachers Better grasp of math concepts from students
- The teachers have someone that can talk content with them.
- Improved test scores Greater understanding of inquiry based teaching Consistent implementation of math curriculum
- The teachers now take a more in-depth look at the data and break it down into areas for remediation. The teachers aren't afraid to consult the coach and ask for clarification and/or help. The parents are receiving packets with ideas and/or activities that are fast and easy to do with their child. The parents have been very receptive and positive.
- Hands on training with teachers and students. She is able to work with small groups of students to practice skills.
- The coach has taken an active role in the MAP assessment and analysis of data. She has familiarized herself with the “XXXX” curriculum and has integrated it into the information presented to teachers.
- She provides continuity across the district in math instruction. She has gained the support and partnership with the teachers at every level. She has supported and assisted in the use of math calculators across the district. Teachers have gained valuable instructional pedagogy and students show continuous improvement.
- Our teachers have a better understanding of math content and strategies. Our students continue to perform better because of the increased usage of data to drive instruction and of best practices instruction.
- Test scores have improved each of the past 2 years; 2. Streamlined approach to Algebra I placement; 3. Streamlined math textbook adoption; 4. Taught classes with at-risk students and has made a difference for them; 5. Helped reduce math class sizes by teaching two classes; 6. Has collaborated with our “XXXX” math dept. to revise and update our Algebra I course map; 7. Facilitated math dept. meetings;
- Helps promote consistent instructions throughout each math class. Improves horizontal and vertical curriculum and assessment alignment. The coach also

- oversees, DOK increases throughout the grade so that difficulty is consistent as kids progress through the grades.
- I feel the comfort level of modifying lessons and offering lesson extensions has improved. Our GMADE scores indicate an improvement in student achievement this year in math.
 - stronger teachers of mathematics concepts K-5
 - The program gives the school and district a support system in the school who understands the instructional content and best practice, and support needed for teachers that ordinarily could not be provided by an administrator.
 - The modeling and implementing of best practices for teaching Math by our Math Coach has enabled us to make substantial growth with student achievement and understanding of math. The excellent training and guidance the math coach has received will enable our school to sustain and only improve on our math growth and achievement. The Math coach has been instrumental in helping teachers to change in the way we teach math. We are no longer measuring student growth by low standards of drill practice and rote memorization. Our teachers stress higher order questioning, exploration and problem solving.
 - Better understanding of teaching methods geared towards math.
 - Teachers now have assistance in development and implementing effective teaching strategies. The mathematics coach is providing leadership for all math teachers.
 - Improve teacher leadership, collaboration, and instructional practices
 - Teacher support Job Embedded PD on relevant topics
 - It has provided a conduit to share her best practices throughout all of our math classrooms.
 - Test scores rising teacher confidence in teaching math

Table E-4. “How have other math teachers responded to having a math coach in their school/district?” (Cohorts 1-2, Spring 2009)

- Having a math coach has drawn the department closer. The group responds well to her leadership and support.
- They have been very positive.
- Most feel it is a benefit. A few still feel it is an intrusion, but the results are very persuasive
- Ditto [The teachers have someone that can talk content with them.]
- Math teachers have been very positive and are willing to meet after school and during planning periods for coaching sessions. Teachers want the math coach in their room as they want to improve their teaching practices.
- We are not departmentalized at our school so all classes teach math and they love having a coach in the school.
- Our faculty is thrilled to have the assistance, guidance and expertise.
- Based on the information shared by key communicators who have participated in the coaching experience, more teachers are initiating conversations and requests for assistance from the coach.
- A major portion of the teachers support her and have asked her to model instruction techniques in their classrooms.
- Our math teachers have responded well to our math coach and have worked collaboratively on many occasions.
- Have utilized her expertise for classroom environment; content specific training and coaching; have appreciated having a leader and a voice for math.
- Great!
- Our teachers have responded positively. At first they were not sure exactly how the coach could help them. After some time working with the coach they enjoy utilizing her as a resource and sounding board.
- Very supportive and welcoming. Teachers want to do well and be better at teaching mathematics.
- In general the teachers have bought into the program and appreciate the support given by the coach. You will still have tenured teachers who do not want others in the classroom, but the instructional coach can find other ways to give support.
- The majority of my teachers have seen the results of increased student achievement/understanding and recognize the advantages of working with our Math Coach.
- Good.
- Almost all have accepted this position as one that can be helpful. They rely on the mathematics coach to provide assistance with content problems.
- The younger teachers appreciate the support and assistance. Some of the veterans are resistant due to the math coach having only “XXXX” years in education.
- They have appreciated having “XXXX”'s support in their PLCs and planning times. She has assisted in curriculum alignment, common assessments, learning checks... She has been a model of an effective leader for all schools throughout the district.
- Better lesson planning; more effective questioning; more productive assessment(s); better classroom management.
- They enjoy having someone to work with them and show them ways to improve and analyze student work

Table E-5. “What have been the biggest challenges that your school/district has faced because of its involvement in the Math Coaching Program?” (Cohorts 1-2, Spring 2009)

- Resources. It is becoming more difficult to staff a complete teaching faculty and pay for a full-time math coach.
- Sharing a coach between “XXXX” schools
- No challenges
- The lack of funding for the resources that the teachers insist on having after the coach shares ideas and strategies using manipulatives.
- Nothing, they just struggle with the different math concepts, not the coach!
- Lack of fully developed Interpersonal skills on the part of the coach.
- The teachers needed to gain a trust in what “XXXX” was trying to do for them.
- There have been no significant challenges in my first year at “XXXX”.
- None that we have not found a solution for.
- TIME-- How to remediate kids who are behind- how to intervene before it is too late.
- Funding and scheduling! I know every district in the state has the same issues.
- some teachers are reluctant to be coached.
- The only issue I see is communication between the coach and administration/mentor. Both parties get busy and really do not sit down to discuss schedule and progress.
- Some of our biggest challenges will involve the implementation of the mandated Response to Intervention (RTI) for both reading and math. The need to have a math intervention person that can also work with students for half a day as well as coach teachers would be both advantageous and purposeful in design. Providing the interventions by Tier Levels require more individual focus from the classroom teachers for those identified RTI students. Time management and delivery of interventions as well as the progress monitoring will require resources that the individual schools having to provide without the necessary funding or assistance.
- Coach being split between “XXXX” schools.
- One or two teachers seem to be a little jealous of [their] "independence."
- Freeing up the math coach for two periods causes adjustments to the master-schedule.
- none.
- Her involvement with teachers has taken from her own instructional time and immediate impact on students.

Table E-6: Cohorts 1-2. The Mathematics Coaching Program, as implemented in my school or district... (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
14. Encourages learning that is in line with Kentucky Core Content.	4.3	0.0	0.0	26.1	69.6	23
15. Has improved the quality of mathematics teaching in my school/district.	4.3	0.0	0.0	36.4	59.1	23

Table E-7: Cohorts 1-2. Value, Resource and Budget Issues... (Spring 2009)

	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Count
16. I am pleased with the overall quality of the Math Coaching Program.	4.3	0.0	0.0	26.1	69.6	23
17. Other teachers in this district/school value the Math Coaching Program.	4.3	0.0	13.0	34.8	47.8	23
18. This school or district has sufficient funds and resources to implement the Math Coaching program.	4.3	4.3	30.4	52.2	8.7	23
19. Math Coaches have adequate time to prepare for their activities.	0.0	13.0	4.3	56.5	26.1	23
20. Budget issues make it difficult to provide Math Coaches with the supplies they request.	8.7	30.4	21.7	30.4	8.7	23
21. Expenses related to granting release time for teachers to attend the Math Coach's professional development sessions that occur throughout the year, are easily absorbed by the district.	4.3	26.1	13.0	39.1	17.4	23
22. This district or school has adequate space to implement the Math Coaching Program.	0.0	0.0	4.3	60.9	34.8	23
23. The Math Coaching Program has been worth the resources (time, money) our school/district has committed to its implementation.	0.0	0.0	4.3	34.8	60.9	23

Table E-8. 23a. The Math Coaching Program has been worth the resources (time, money) our school/district has committed to its implementation. Why do you agree or disagree?
... (Cohorts 1-2, Spring 2009)

- I feel that our coach has help bring new ideas to the math department that focus on increasing student achievement.
- It has had a positive and almost immediate impact for two years.
- Math scores have risen due to direction math coach provides for teachers. She is able to discuss strategies with teachers and model in the classroom. These sessions are always followed by reflective conversations where the teacher reflects on areas of need.
- Our coach is very detail oriented and works to share her knowledge with the teachers and make it easier for them to have resources ready and available. K thru 3 are working together and making gains in their focus on math. I love having the coach!
- It is not just a resource or program, it is a person that can be actively involved with the student's learning.
- The coaching program has been instrumental in building the capacity of teachers within the building.
- I see the mathematics' program in a much stronger position than when "XXXX" entered the picture. She is a self starter with a long career of success coming into the program.
- The coaching program has been worth the resources that have been committed to it because instruction continues to improve as a result of the work done by our math coach.
- If you look at my responses to the other questions on this survey it becomes clear that our math coach has been a wise investment on our part.
- Resources we have used in the past are quickly dwindling! We have been informed today of another budget cut, and an additional 2.6% decrease in SEEK funding
- Our school/district is committed to the math coaching program. We will continue to strive to find the required resources in order to continue the program.
- Anytime you can get a professional teacher in a content area to assist and support other teachers in your building it has to be an asset. I believe our Math department has a mutual respect for both our coach's ability to teach and help with current math core content and instructional strategies.
- The Math Coach Program has been instrumental in completing changing the way we teach Math at my school. Throughout our building I am seeing best practices incorporated in all our math lessons. Teachers that need help look forward to working with our Math Coach. She is truly an asset and a wealth of knowledge to our school and district.
- Our "XXXX" school is a Tier 5 school. The mathematics coach has assisted us in developing effective teaching strategies, ensuring that all teachers cover core content, and, hopefully, raising our test scores.
- Teacher leadership and mathematics instruction are improving.
- I have witnessed improved instructional effectiveness in our math department (with 3 teachers specifically) that were a direct result of time spent with our math coach.
- We have seen positive results in implementing the coaching program

Table E-9. If you have just completed your second year with a Mathematics Coach, are you planning to complete an application to return to the Mathematics Coaching Program for Year 3? (Cohort 2, Spring 2009)

	Percent %	Count
Yes	87.5	14
No	12.5	2

Table E-10. If you have completed your third year with a Mathematics Coach, will your coach continue with her/his coaching duties next year even though their formal training is complete? (Cohort 1, Spring 2009)

	Percent %	Count
Yes	90.0	9
No	10.0	1

Table E-11. Reasons for NOT continuing in Mathematics Coaching Program (Cohort 2, Spring 2009)

- We have had a math coach for "XXXX" years. Unfortunately the budget does not allow us to continue.
- We were not sure of assignments due to budget constraints

Table E-12. Reasons for NOT continuing in Mathematics Coaching Program Beyond the Third Year (Cohort 1, Spring 2009)

- I do not know.
- We have had a math coach for "XXXX" years. Unfortunately the budget does not allow us to continue.