

THE IMPACT OF A CLINICAL FACULTY INSTITUTE ON PARTICIPANTS' SKILLS FOR MENTORING NOVICE TEACHERS, GRADES K-8

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Abstract

A seven-day Clinical Faculty Institute was implemented to increase the skills of mentor teachers and to develop a cadre of Clinical Faculty for the four participating colleges and universities. The 128 participants entered with “some confidence” in their ability to mentor novice teachers in areas typically taught in methods courses; whereas, they displayed “minimal confidence” in skills typically taught in supervisory courses. By the end of the Institute, participants showed significant changes in their “self-perceptions” of skills in twenty areas, with post-scores clustering between 3.5 and 3.9 on a four-point scale. Future institutes should focus on supervisory skills and then emphasize more reflection upon the congruence of teaching, with the “best practices” articulated in national standards.

Introduction

Over 1,000 future teachers of grades K-8 are educated by four institutions in the Commonwealth of Virginia: Longwood University, Mary Washington College, Norfolk State University, and Virginia Commonwealth University. Data collected by these institutions in 1995 revealed that about 25% of novice teachers' experiences were in the areas of mathematics and science. For this reason, the institutions sought to establish a Clinical Faculty Institute for mentors of K-8 teachers and a cadre of Clinical Faculty members at each institution. With funding from the NSF-funded Virginia Collaborative for Excellence in the Preparation of Teachers (VCEPT), an institute was developed and implemented to increase Clinical Faculty members' skills in:

- establishing collaborative and collegial relationships between K-8 and university faculty;
- coaching and mentoring novice teachers; practicum students, student teachers, and beginning teachers;
- understanding best practices in mathematics and science instruction and articulating these practices.

The purpose of this article is to describe the Clinical Faculty Institute and its impact on the participants.

Characteristics, Expectations, and Selection of Clinical Faculty

In the fall of 1997, a Clinical Faculty Committee was established to provide guidance for program development and implementation. The committee consisted of representatives from the Mathematics & Science Center and from each of the four institutions, including one or two administrators (typically deans), one or two teacher educators, and several K-8 educators associated with the institution. The Clinical Faculty Committee established an operational definition of a Clinical Faculty member, articulated expectations, and developed a timeline and process for selecting K-8 educators to participate in a Collaborative-wide residential institute held at the Mathematics & Science Center in Richmond, Virginia.

Operational Definition — Clinical Faculty members were defined as a “cooperating teacher plus,” that is, one who had demonstrated excellence in the teaching of mathematics and science, received professional recognition, possessed coaching and mentoring skills, understood “best practices” in the teaching of math and science, and could articulate “best practices” to novice teachers. In addition, a Clinical Faculty member had to be recommended by the school division or institution of higher education, selected by the college or university, and approved by the school division.

Expectations — Generally, Clinical Faculty members were to perform the duties of a cooperating teacher, including supervision of practicum and student teachers. In addition, Clinical Faculty members were expected to co-teach academic or methods courses at the college or university, communicate the college or university program to novice teachers and fellow professionals, advise the college or university on development of courses and in-school experiences for novice teachers, model exemplary classroom lessons (math and science) for novice teachers and peers, and provide general leadership for cooperating teachers within a school. With more experience, Clinical Faculty staff were also expected to become a “trainer of trainers” by working as a member of a team to design and implement Clinical Faculty institutes and workshops at the local level.

Criteria for Selection — On the Clinical Faculty application, applicants provided demographic information, educational background including degrees earned and major, synopsis of full-time teaching experience, work with pre-service teachers, and professional involvement and leadership. In addition, applicants responded to four short questions, using a maximum of one page, about commitment to the overall project, knowledge of math and science standards, examples of exemplary practices implemented, and self-perceptions of his/her role as a mentor. Each college or university selected the participants for the Clinical Faculty Institute based upon the following criteria: evidence of continued learning with a master's degree preferred, a minimum of five years of teaching experience, prior experience working with novice teachers in a school setting, demonstrated ability to implement exemplary instruction in math and science, strong oral and written communication skills, effective human relations skills, demonstrated ability to work with adults, evidence of professional involvement, and commitment to the overall project and mentoring of fellow professionals.

Timeline — During the fall and winter, each institution advertised for participants for a Clinical Faculty Institute, to be held the following summer. The general timeline included notifying key personnel within K-12 school divisions (September and October), conducting awareness sessions for potential applicants (November and December), distributing and receiving applications (January and February), and selecting participants (March). Applications were then forwarded to the Mathematics & Science Center for inclusion in the Clinical Faculty Summer Institute. In April and May, the Center contacted applicants, surveyed participants about areas in which more math and science training were desired, and customized the general seminar agenda to meet participants' needs.

Population — During three summers, from 1997 to 1999, a total of 128 Clinical Faculty were trained at the Collaborative-wide institutes held at the Mathematics & Science Center. Overall, the population consisted of 94 elementary teachers, 23 middle school teachers, 1 special education teacher, and 10 teachers for whom demographic information is unavailable. As shown in Table 1, teaching experience ranged from 1 to 37 years, with the typical participant having 14.6 years of experience. Typically, participants had similar experience in teaching science (11.79 years) and math (12.81 years). Overall, the participants had been in a school division for multiple years, with the average being 12.07 years.

Table 1
Teaching Experience of Participants

Category	Mean (yrs)	Standard Deviation (yrs)	Range (yrs)
Total years of professional teaching experience	14.60	8.63	1 – 37
Years of experience teaching math	12.81	8.21	1 – 31
Years of experience teaching science	11.79	8.27	1 – 37
Number of years in current school system	12.07	8.07	1 – 37

Methods and Materials

Leadership for development and implementation of the Collaborative-wide institute was provided by Mary Washington College (MWC) and the Mathematics & Science Center, a unique consortium of seven K-12 school divisions that is located in Richmond, Virginia. MWC was selected because it had a successful Clinical Faculty Program, although it did not focus specifically on math and science. The Mathematics & Science Center was selected because of its subject-matter expertise and proven track record of developing effective professional development programs for K-12 educators.

The Clinical Faculty Institute consisted of a one-week institute during the summer and two follow-up sessions during the academic year. Typically, summer sessions were held from 8:30 a.m. to 4:00 p.m. and Saturday academic year follow-up sessions from 8:00 a.m. to 3:30 p.m. All sessions were held at the Mathematics & Science Center. Appropriate breaks and lunches were provided. All participants received daily honoraria, lodging and meals, and mileage to and from the Institute.

Although slight variations occurred during the three summer institutes, approximately 41 hours of instruction were provided annually. Participants received a notebook with written handouts for each session. In addition, *Supervising Student Teachers: The Professional Way* (5th ed.) by Henry and Beasley was used as a supplemental text [1]. For the 1999 Clinical Faculty Institute, the session topics and times are provided in Table 2.

Table 2
Overview of Clinical Faculty Institute

Day	Topic	Time (hrs)
1	Overview of Institute & Pre-Evaluation	0.50
	Needs of Novice Teachers & Role of Clinical Faculty	3.00
	Guiding Novice Teachers to Observe Effective Teaching Behaviors	2.50
2	Introduction & Follow-Up to Prior Day	0.25
	Guiding Novice Teachers to Observe Components of Instruction	1.75
	Concurrent Session A: Math & Science Lessons	1.50
	Guiding Novice Teachers to Implement Activities & Investigations	1.25
	Concurrent Session B: Math & Science Lessons	1.25
3	Introduction & Follow-Up to Prior Day	0.25
	Guiding Novice Teachers: From Observation to Problem-Solving Conferences	5.75
4	Introduction & Follow-Up to Prior Day	0.25
	Guiding Novice Teachers to Meet Academic Standards for All Students	4.25
	Concurrent Session C: Math & Science Lessons	1.50
5	Introduction & Follow-Up to Prior Day	0.25
	Typical Challenges of Working with Novice Teachers	3.00
	Descriptions of College & University Teacher Preparation Programs	1.25
	Summer Closure & Post-Summer Institute Evaluation	0.50
6	Evaluating Student Teachers	3.75
	Concurrent Session D: Math & Science Lessons	2.25
7	Legal Implications of Mentoring Novice Teachers	3.50
	Concurrent Session E: Math & Science Lessons	2.00
	Closure & Post-Evaluation	0.50
	Institute Total	41.00

Day 1: Summer Institute — In the session on “Needs of Novice Teachers & Role of Clinical Faculty,” participants identified the needs of novice teachers, related the needs of novice teachers to the role of Clinical Faculty, and applied tenets of adult learning to working with novice teachers. The reflective practitioner model was explained and procedures for encouraging reflection, such as dialogue journals, were described and used throughout the institute.

In the second major session, “Guiding Novice Teachers to Observe Effective Teaching Behaviors,” participants used various instruments for making systematic observations of various aspects of teaching and learning at predetermined intervals. Observations were made of various math and science mini-lessons, typically twenty to thirty minutes in length. Then, participants described general competencies of effective teachers. Appropriate uses of instruments with novice teachers at various stages of their preparation were discussed.

Day 2: Summer Institute — The day began with a session on “Guiding Novice Teachers to Observe Components of Instruction.” Participants learned to script tape lessons, to make behavioral statements, and to formulate judgment statements using a set of standards. Observations were made of various math and science lessons that focused on explanations and demonstrations. Participants used standards for effective explanations and demonstrations as the basis of judgment statements and strengthened their ability to articulate features of effective instruction.

In the session on “Guiding Novice Teachers to Implement Activities & Investigations,” participants completed a self-inventory to determine their use of constructivist and non-constructivist teaching practices, used an instrument to analyze the constructive nature of various instructional strategies, reviewed standards for effective activities and investigations, identified common problems of novice teachers, and discussed challenges that exist when teaching philosophies of university staff, the novice teacher, and the Clinical Faculty member differ substantially.

The “Concurrent Sessions on Math and Science Lessons” were based upon identified needs of participants. Each spring, after institute participants were selected, the Center surveyed participants about components of Virginia’s *Standards of Learning* [2] in which more training was needed. At the elementary level, participants identified the earth and physical sciences and the newer mathematical strands, e.g. algebraic thinking, probability/statistics, and geometry. At

the middle school level, participants were also interested in the integration of graphing calculators and probes. The math and science concurrent sessions were designed to increase participants' conceptual understanding and/or to share effective instructional strategies.

Day 3: Summer Institute — The entire day was devoted to a session on “Guiding Novice Teachers: From Observations to Problem-Solving Conferences.” Through role-playing, participants learned and practiced strategies for observing novice teachers, determining important feedback to communicate, and conducting a daily or weekly conference. Challenges of communicating with defensive teachers were discussed and role-played.

Day 4: Summer Institute — In the session on “Guiding Novice Teachers to Meet Academic Standards for All Students,” participants used the principles of “backward design,” articulated by Wiggins and McTighe, to help novice teachers turn creative activities into effective standards-based lessons with appropriate assessment [3]. Strategies for using elements of effective instruction to help students design effective lessons based upon a direct, guided inquiry, or inquiry model, were discussed and used to analyze various math and science lessons. Participants also reviewed the Learning Cycle, a constructivist approach used in the design of many elementary programs, and applied it to the analysis of a unit on wind power. As an extension, participants analyzed the effectiveness of various lessons in meeting individual needs, and discussed techniques for helping novice teachers succeed with diverse learners within a classroom. Concurrent sessions on math and science, using the previously described model, were also held.

Day 5: Summer Institute — In “Typical Challenges of Working with Novice Teachers,” participants identified unanswered questions and challenges not previously addressed. Various scenarios from the ancillary textbook, *Supervising Student Teachers the Professional Way* (5th ed.) [1], were discussed. Over lunch and in the session entitled, “Teacher Preparation Programs,” Clinical Faculty members and staff from each college or university discussed techniques for building effective collaboration between higher education and Clinical Faculty staff, the general teacher preparation program at the institution, and the various in-school experiences required of novice teachers.

Day 6: Academic Year Follow-Up — The first academic year follow-up, typically held in late November or early December, began with a session on “Evaluating Student Teachers.” Participants discussed procedures and instruments used to evaluate novice teachers at the participating colleges and universities, and practiced evaluating novice teachers using a checklist, a checklist with narrative, and a narrative. Common challenges encountered with novice teachers during evaluation and tips for handling were discussed. Institute participants led concurrent sessions on math and science.

Day 7: Academic Year Follow-Up — In the second academic year follow-up, typically held in March, the major focus was a session on “Legal Implications of Mentoring Novice Teachers.” Participants discussed legal aspects of working with novice teachers, legal decisions rendered in various cases analyzed by participants, and the responsibilities of the Clinical Faculty staff when mentoring a novice educator. Institute participants led concurrent math and science sessions.

Instruments Used to Evaluate Clinical Faculty Institute

Data were collected from the participants at the beginning, end of the summer institute, and end of the academic year. To assess outcomes, a four-point Likert Scale was used to determine participants’ self-perceptions of their skills in establishing collaborative and collegial relationships (six questions), coaching and mentoring novice teachers (nine questions), and articulating best practices for teaching mathematical and scientific concepts (seven questions). Participants rated their confidence as: (1) “No Confidence,” (2) “Minimal Confidence,” (3) “Some Confidence,” and (4) “Much Confidence.” On the survey, questions about the various components were randomly mixed.

In addition, various questions were used for formative assessment throughout the project. For example, participants were asked to provide feedback on their goals for the Institute, their satisfaction with the Institute’s presentations, activities, presenters, and facilities, as well as their recommendations for future institutes.

Results

Collaborative and Collegial Relationships — Six questions on the Likert Survey were constructed to detect changes in participants’ self-confidence in strengthening collaborative and collegial relationships between K-8 and university faculty. Mean pre-and post-scores were calculated for each question (see Table 3).

On the pre-test, participants' confidence levels ranged from 2.74 to 3.17, with most values being on the borderline of "minimal" to "some confidence." Participants showed the greatest confidence in areas most directly related to daily teaching; that is, identifying needs of novice teachers and competencies of effective teachers. Participants were less confident about their abilities to identify student teaching requirements, apply tenets of adult learning, build collaborative relationships, and function as Clinical Faculty.

By the end of the Institute, participants' confidence levels on the various questions ranged from 3.52 to 3.82 on the four-point scale. Overall, participants were at the high end of "some confidence" and approaching "much confidence." Participants showed the greatest change (.89), and the largest final scores, on the three topics in which they initially displayed the least confidence.

Table 3
Changes in Participants' Self Perceptions of Ability to Establish Collaborative and Collegial Relationships

Question	Pre-Mean	Post-Mean	Change Mean	Calculated <i>t</i>
Identify general "student teaching" requirements of both universities and local school divisions	2.74	3.63	0.89	9.87
Relate major tenets of adult learning to working with novice teachers	2.76	3.52	0.76	10.00
Build effective collaboration between university faculty and Clinical Faculty	2.82	3.71	0.89	11.10
Relate needs of novice teachers to the role of cooperating teachers/clinical faculty	2.91	3.80	0.89	12.30
Identify the needs of novice teachers	3.11	3.82	0.71	11.28
Describe general competencies of effective teachers	3.17	3.77	0.60	10.35

Note: Numbers in sample ranged from 119 to 122. All paired *t*-tests were statistically significant $p \leq .001$.

During the three years of the Institute, the sessions and time devoted to building collaborative and collegial relationships remained consistent. The three-hour session, “Needs of Novice Teachers & Role of Clinical Faculty,” was effective in increasing participants’ general understanding of their role as mentors, in articulating concerns they hoped to address during the week, and in fostering relationships among participants from diverse locations. Likewise, the three-hour session held on the fifth day, “Typical Challenges of Working with Novice Teachers,” provided an opportunity to articulate and discuss new concerns using the scenarios in the Henry & Beasley text.

For many of the participants, the opportunity to meet with representatives from the various institutes on the fifth day of the Institute was invaluable. College/university representatives and their associated Clinical Faculty ate lunch together, and discussed specific requirements of the institution for practicum and novice teachers. This began a relationship that was continued through periodic meetings of Clinical Faculty on the individual campuses.

Coaching and Mentoring Skills — Nine questions on the Likert Survey solicited participants’ perceptions of their skills to mentor and coach novice teachers (see Table 4). Initially, participants’ self-perceptions ranged from 2.87 to 3.29. By the end of the Institute, participants’ scores ranged from 3.65 to 3.82 and reflected strong confidence in their abilities to coach and mentor.

Participants perceived great gains in their ability to use observation techniques including systematic observations with predetermined criteria and script taping. For many, it was the first time they had used such instruments. Because many practicum students appear with the charge to “observe,” but no tools, the teachers thought that the observation instruments would be helpful also in focusing these students’ attention on effective teaching behaviors. The session on “Guiding Novice Teachers to Observe Effective Teaching Behaviors” (2.5 hrs) remained consistent over the years and was popular, for the teachers rotated role-playing students and observers in various lessons that focused on the chemistry of solutions. This blend of “supervision” and “experiencing math or science lessons” proved to be the most effective way to incorporate math and science lessons into the Institute.

The session on “Guiding Novice Teachers to Observe Components of Instruction” was generally the same over the years with participants learning to script tape by viewing videos of

short explanations or demonstrations, typically ten to fifteen minutes. This short session (1.75

Table 4
Changes in Participants' Self Perceptions of Coaching and Mentoring Skills

Question	Pre-Mean	Post-Mean	Change Mean	Calculated <i>t</i>
Use a systematic process for helping novice teachers to observe other professionals	2.87	3.77	0.90	10.50
Use principles of coaching when working with novice teachers	2.88	3.65	0.77	10.65
Conduct effective evaluations of novice teachers	2.89	3.75	0.86	12.81
Conduct effective supervisory conferences with novice teachers	2.93	3.72	0.79	10.52
Work with novice teachers during the reflecting phase of teaching	3.11	3.79	0.68	10.46
Use active listening techniques with novice teachers	3.11	3.70	0.59	8.60
Work with novice teachers to plan differentiated experiences for students	3.27	3.66	0.39	6.31
Work with novice teachers during the interacting phase of teaching	3.27	3.82	0.55	8.63
Work with novice teachers during the planning phase of teaching	3.29	3.78	0.49	9.06

Note: Numbers in sample ranged from 119 to 122. All paired *t*-tests were statistically significant $p \leq .001$.

hrs) was effective in introducing the technique and having the observer use "best practices," not personal opinion, as a basis for developing feedback. The session on "Guiding Novice Teachers to Implement Activities & Investigations" (1.25 hrs) involved participants discussing challenges that novice teachers face, analyzing case studies, and discussing appropriate feedback. This session was valuable, but needed additional time for participants to script tape these more complex lessons and to develop feedback based upon standards for effective implementation.

Annually, the session on "Guiding Novice Teachers: From Observation to Problem-Solving Conferences" produced the greatest change among the participants. Virtually none of the

participants had received prior training in how to prepare for a supervisory conference and to work effectively with individuals exhibiting various defensive behaviors. Likewise, the academic-year sessions on “Evaluating Student Teachers and Legal Implications of Working with Novice Teachers” introduced teachers to information not encountered previously and greatly increased their self-confidence in mentoring teachers.

Consistently, participants stated that the most significant experiences involved using a variety of observation instruments, providing objective feedback, and planning and conducting conferences, ranging from daily to evaluative. These findings reflect the prior educational experiences of classroom teachers, which include multiple courses on curriculum instruction and curriculum, but limited courses on supervision. Participants also cited the applicability of the supervisory skills to team or department leadership and to interactions with students and parents.

Best Practices and Abilities to Articulate — Seven questions on the Likert Survey addressed participants’ perceptions of their skills. Five of the questions were new and two were also included under “coaching and mentoring” skills (see Table 5). Generally, participants entered with higher pre-scores in this area, 3.12 to 3.48, than on other areas. The exception was a question on the SCIS learning cycle in which the terminology, SCIS, negatively impacted scores. Given that the teachers were selected for proven ability to “teach math and science,” higher entry scores would be expected. By the end of the Institute, however, scores reflected even more confidence, ranging from 3.23 to 3.80.

Table 5
Changes in Participants' Self-Perceptions of Conceptual Understanding of Best Practices
and Ability to Articulate

Question	Pre-Mean	Post-Mean	Change Mean	Calculated t
Use the SCIS learning cycles to analyze an instructional unit	1.99	3.23	1.24	12.59
Describe "best practices" in math and science instruction	3.12	3.75	0.63	10.06
Identify, describe, and apply elements of effective instruction to the design of various types of lessons such as direct instruction, guided inquiry, and open-ended inquiry.	3.12	3.72	0.60	7.54
Work with novice teachers to plan differentiated experiences for students (repeat question)	3.27	3.66	0.39	6.31
Work with novice teachers during the planning phase of teaching (repeat question)	3.29	3.78	0.49	9.06
Use a model lesson to increase students' understanding of math and science concepts	3.36	3.82	0.46	7.19
Describe one's own teaching style and philosophy.	3.48	3.80	0.32	5.37

Note: Numbers in sample ranged from 119 to 122. All paired t -tests were statistically significant $p \leq .001$.

The session on "Guiding Novice Teachers to Meet Academic Standards for All Students" was designed to improve participants' skills in helping novice teachers plan instruction that was consistent with national and state standards. In the summer of 1997, participants were very concerned about helping novice teachers use Virginia's *Standards of Learning* (SOL) [2] as the basis of planning, and the workshop activities reflected this need. From 1997 to 1999, major changes occurred in all Virginia school divisions and colleges as high-stakes testing was implemented. Local divisions aligned curricula and involved teachers in multiple workshops on standards; colleges and universities required all student teachers to develop lesson plans based upon the SOL. Instead of general planning, participants requested assistance in helping novice teachers differentiate strategies to meet the needs of diverse students, and the session was

modified to meet this need. Regardless of the emphasis, the length of the session on “Academic Standards for All” needs to be increased, for time to apply concepts was insufficient.

The need for concurrent sessions on math and science lessons varied with the experience of the teacher, the size of the school division, and the year of the Institute. In the summer of 1997, participants rated the concurrent sessions very highly, with older teachers (who had not attended school recently) and those from smaller school divisions rating them the highest. By 1999, most teachers were responsible for implementing highly aligned lock-step curricula in their divisions and perceived little need for new lessons. Interestingly, however, the teachers continued to rate the very unique learning experiences based in the Center’s designed facilities (such as the aquaria and space station simulator) very highly. Even though they could not reproduce the experience directly in their classroom, they were positive about the opportunity to learn math and science in less traditional ways.

General Institute — Participants were uniformly positive about: the clarity of the Institute's goals, the range of topics and content covered, the variety of instructional methods and examples, the opportunities to interact, and the written materials provided.

Ratings ranged from 3.61 to 3.81 on a four-point scale (3 = agree and 4 = strongly agree). On open-ended questions, however, participants consistently cited the need for a shorter day. The majority found it difficult to concentrate from 8:30 a.m. to 4:00 p.m. despite a generous lunch hour and breaks. Because of the cost of a residential institute, it was difficult to justify shortening the day (and thus lengthening the number of days). With a non-residential program, day length could be modified.

Conclusion

Participation in a seven-day institute significantly increased participants’ perceptions of their abilities to establish collaborative and collegial relationships between K-8 and university faculty, coach and mentor novice teachers, and articulate “best practices” in mathematics and science. Participants entered the Institute with “some confidence” in their ability to mentor students in areas typically taught in methods courses, whereas they displayed “minimal confidence” in skills more typically taught in supervisory courses. Change was greatest in the “supervisory” areas and least in the “teaching” areas, with the result being that post-scores clustered between 3.5 and 3.9 on a four-point scale. The Clinical Faculty Institute provided

participants with increased skills for working with novice teachers, as well as promoting skills recommended by the Interstate New Teacher Assessment and Support Consortium (INTASC), such as being a reflective practitioner and fostering relationships within the larger educational community [4]. Overall reaction is best summarized by one participant's comment:

Every teacher who asks to be a cooperating teacher should go through this Institute. I feel very comfortable now with the notion that a student teacher will be in my classroom and will depend on me for the most positive educational experience possible! I look forward to working as a Clinical Faculty member and hope to increase my involvement in pre-service teacher training.

Based upon the three years of experience in implementing a Clinical Faculty Institute and the results of the Likert Survey and open-ended questions, the authors recommend the following:

- use the operational definition and expectations developed for Clinical Faculty, as well as the timeline, application, and criteria for selection;
- focus the majority of institute time on topics related to supervisory rather than teaching skills;
- utilize some of the time spent on math and science lessons to increase the time spent on academic standards for all students and on additional practice time for participants to observe activities and investigations with various tools, especially script taping;
- deliver math and science content through lessons in which participants rotate role-playing "students" and "observers"—thus, emphasizing ability to identify and articulate best practices rather than acquisition of model lessons;
- if funds permit, continue a seven-day residential institute. If not, reduce costs by holding non-residential institutes and by spreading sessions between the summer and academic year.

Products and Next Steps

Interested educators may obtain a draft copy of the professional development manual, *Clinical Faculty: Resources for Mentoring Novice Teachers of Math and Science*, from the Mathematics & Science Center [5]. The manual includes the instructional materials, evaluation instruments, and administrative tools used to implement the Institute. Currently, classroom data

are being collected on the effectiveness of the Clinical Faculty program in “increasing the quality and quantity of math and science instructional experiences engaged in by novice teachers.”

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