

Blue Ribbon Algebra

Report of Project

Improving Teacher Quality Grant Program
ITQ-03-WVU-1

Institute for Math Learning
West Virginia University
Morgantown, WV

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Project Director

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Twenty-three mathematics educators participated in the Blue Ribbon Algebra Institute during the summer and fall of 2003 at West Virginia University (WVU) through the Improving Teacher Quality program. In addition, a pre-service graduate student was able to participate in the workshop meetings but did not receive materials purchased with grant funds. The week before the institute, two participants withdrew for health/personal issues. One of those participant slots was filled. 15 participants chose to use the opportunity to gain graduate level mathematics credit through WVU. The purpose of this institute is to provide professional development to mathematics and special educators, with the specific goal of improving the quality of teaching Algebra to special needs students. The framework for the professional development will be a week long institute with two follow up sessions. The institute had the following

- ▶ Affirm and strengthen the content knowledge and methodology of teaching Algebra to special needs students.
- ▶ Strengthen technology skills that enhance and are an integral part of the learning of mathematics.
- ▶ Work with activity based examples.
- ▶ Establish a regional collaborative for both mathematics and special educators teaching similar content.
- ▶ Learn the appropriate way to integrate graphing calculators and motion ranggers into the classroom.
- ▶ Correlate the concepts taught in high school mathematics to real-world applications.
- ▶ Learn from leaders with specialized expertise as well as from peers.

The project director was Dr. Laura J. Pyzdrowski, Ed. D, Assistant Professor of Mathematics in the Institute for Math Learning at West Virginia University. Educational consultants were Kenna Barger a recognized West Virginia teacher leader in mathematics from Randolph County and Amy Rice, the Special Education Department Chair at Frankfort High School in Mineral County, West Virginia.

Recruitment of Participants

A recruitment flyer was prepared and posted on the Blue Ribbon Mathematics Partnership Committee Web Site: www.blueribbon.ws. An application form was also prepared and posted on the site. (See the attachments for a copy of the flyer and application form.) The blue ribbon hosting counties and institutions were contacted to submit names of sponsored participants. Once all Blue Ribbon affiliated participants were accepted, vacancies were filled on a first come, first to get in basis. Several late applicants from participating counties were placed on a wait list. One participant attended the project and paid the registration fee with personal funds; however, only

the 23 accepted participants from West Virginia educational institutions were awarded stipends and given instructional materials. The project director and consultants did not receive stipends, but did receive instructional materials.

Participants

The following educators participated in the institute:

Donald Deal Morgantown High Monongalia	Lisa Hileman Preston High Preston	Carol Snyder North Marion High Marion
Sharon Dixon Mongantown High Monongalia	Lisa Poland Preston High Preston	Nelson Elliott North Marion High Marion
Lynn Cutlip Liberty High Harrison	Brenda Harlow Buckhannon-Upshur High Upshur	Paula Vilone East Fairmont High Marion
Betty Merrill Liberty High Harrison	Michael Mendicino Buckhannon-Upshur High Upshur	Julie Smith Robert C. Byrd Harrison
Charlea Florence South Middle Monongalia	Diane Cunningham Parkersburg High Wood	Ron Schleger Preston County Sub
Linda Jackson Trinity High Monongalia	Mary Wright Parkersburg High Wood	Andrea Cathell Wheeling Park High Ohio
Patricia DeBiase University High Monongalia	Larry Mason North Marion High Marion	Corliss Clark Pre-service Teacher
Kent Williamson University High Monongalia	Patricia Trimble East Fairmont High Marion	Kenna Barger Randolph County Tech Cntr Randolph
Pyzdrowski, Laura WVU	Tammi Musgrove East Fairmont High Marion	Amy Rice Frankfort High School Mineral

Program

Summer Institute Schedule

The Institute made use of the TI-83 Plus calculators, motion rangers, geoboards and

appropriate applications and materials. The activities were correlated to the West Virginia Content Standards and Objectives and performance descriptors. Each participant received, course materials, lunch each day, a TI-83 Plus calculator, a motion ranger, *Algeblocks* and the *Algeblock Activity Book* and a geoboard. Participants received three books: *The 3 R's of Algebra: Recognize, Remember, and Recreate the Patterns - Instruction Strategies for Teaching Algebra to Students with Learning Disabilities*, *Math and Science in Motion*, and *Navigating Through Algebra*. Participants investigated such topics as the Pythagorean Theorem, the Distance Formula, the Area of Polygons (estimating and exact) and Pick's Theorem. Participants took part in hands-on explorations that modeled effective classroom techniques for discovering and learning elementary Algebra and learned to make that material accessible to all students. They prepared materials to use in their classrooms.

Fall 2003, Follow - Up: Two one day follow- up sessions.

Session 1: Using calculators/rangers, algeblocks and measuring tools (caliper and micrometer) in algebra activities, participants took part in hands-on explorations that modeled effective classroom techniques for discovering and learning elementary Algebra. They continued to prepare materials to use in their classrooms. They also learned about adaptations for special needs students.

Session 2: Sharing Best Practices

Participants presented and shared lessons developed for use in the classroom. Teacher participants used the WVU Smart Board for their presentations. A web site will be created to make the lessons available to all interested mathematics educators.

Evaluation

Journals

Each participant was asked to respond to five journal entries (See the appendix for responses.) Overall, they felt that their technology skills were strengthened and would be able to integrate new material into the classroom. They enhanced the content knowledge of algebra and had the opportunity to work in a hands on environment with activity based examples. They also had time to work with peers. The educational consultants were rated very well and were seen as expert presenters. Participants gave ideas for future professional development opportunities.

Pre/Post Test

Each participant was asked to take a content/skill pre and post test (See appendix.) The tests were developed and graded by the consultants. The mean score of the pretest was 24 and mean score for the post test was 96.7. The total possible score was 100.

Course Evaluations

Each participant was asked to complete a course evaluation (See the appendix for results.) Selected outcomes from the forms follow: Some participants neglected the back page of the evaluation.

Final Comments on Survey: Just continue to have and always remember Sp. Ed. We could use laptops. Wonderful! I'm more motivated to explore more activities. Thank You! Excellent as it was. Food was also great! Great all week. Great Job!!! Excellent Workshop. I had a good time, I use calc, but still learned more.

Summary of Selected Evaluations Questions (average score out of 5):

The mathematics in this course was at the appropriate mathematical level.

15- 5's, 2 - 4's and 1 -3 4.8

The mathematics in this course will enhance my teaching and student learning.

17- 5's and 1 - 4 4.9

The course materials were useful in helping me learn how to teach more effectively with hand-held technology.

17- 5's and 1 - 4 4.9

The discussions about how and why to teach with technology were valuable to my everyday teaching.

15- 5's and 3 - 4's 4.8

The materials provided were useful.

17- 5's and 1 - 4 4.9

As a result of this course, I will use handheld technology more in my teaching.

17- 5's and 1 - 4 4.9

The instructor enhanced his/her instruction with appropriate use of the calculator.

18- 5's 5.0

The organizer/host for this course was helpful.

18- 5's 5.0

The instructor helped me learn how to teach more effectively with hand-held technology.

18- 5's 5.0

The instructor demonstrated thorough knowledge of the course material.

18- 5's 5.0

The instructor exhibited a positive attitude and enthusiasm

18- 5's 5.0

The presentation skills demonstrate by the instructor were helpful in communication the course material.

17- 5's and 1 - 4 4.9

Rating of Overall Experience

17- 5's 5.0

Improving Teacher Quality Participant Survey

Each participant was asked to complete an Eisenhower Professional Development Participant Survey (See the appendix for results.)

Summary of Selected Evaluation Questions: 3 participants did not turn in surveys

Did the workshop increase your knowledge relative to the topic(s) presented?

21- Very Well

Did the workshop increase your skills relative to the topic(s) presented?
3- Moderately, 18 Very Well

Participant Lessons

Participants developed lessons to use in their classrooms and were required to share them with the other participants in the institute. Please see www.blueribbon.ws for participant lesson plans which will be available by February, 2004.

All of the evaluation instruments indicated that the teachers were very pleased with the institute, the consultants, and the content.

Appendixes

Binder 1

Group Photo
Selected Photos
Course Evaluations
Journals
Pre/Post Test and Results
Improving Teacher Quality Participant Survey
Improving Teacher Quality Project Director Survey

Binder 2

Flyer and Application form
Workshop Correspondence
Agendas
Course Requirements, grading rubric, comment sheet
Selected Course Materials
Participant Work

