

Michigan Eisenhower Higher Education Grantee Professional Development Programming: Review and Assessment

**A Report of Findings from a Review of
Professional Development Programming
Provided by Recipients of Michigan Higher Education Competitive Grants
Between January 2000 and April 2001**

June 2001

□ Background. A review and assessment of the Michigan Eisenhower Professional Development Program began in Fall 1999. The purpose of the evaluation was to determine effects of the Michigan Eisenhower program, as well as take a "snapshot" of the status of mathematics and science teaching and learning in Michigan. In addition to requiring participation of 1999-2000 higher education grantees, local grantees and mathematics and science centers were also invited to participate.

The Michigan Department of Education identified a set of performance objectives for which evaluative information would be gathered to assess progress in mathematics and science teaching and learning in Michigan. Some objectives related to the nature and extent of professional development being provided through programs conducted by higher education grantees. An evaluation plan incorporating those performance objectives was developed and implemented by Science and Mathematics Program Improvement (SAMPI) at Western Michigan University. The work was conducted between November 1999 and June 2001. A variety of data collection procedures were used.

To gather information about the nature and extent of professional development, several strategies were used. Evaluators observed professional development sessions facilitated by grantees, conducted interviews of project directors and other staff, gathered participation data, and reviewed project reports and other documents. This document reports on what was learned about professional development programming among the 1999-2000 higher education grantees. A separate report describes how high poverty and unaccredited schools were served by higher education grantees. Reports on other aspects of the review and assessment are also available.

□ Organization of the Report. Findings in this report are organized around a set of questions about professional development programming: teachers served, amount of programming provided, quality of professional development provided, how programming addresses the Michigan Curriculum Framework, how programming reflects state professional development standards, staff perceptions of effectiveness of programming, and strengths and limitations of the professional development.

□ Study Methods. Three primary strategies were used to gather information about the professional development (PD) programming being offered: 1) observation of one or more PD sessions at each of the grantee sites using a debriefing protocol based on state and national standards (see description below), 2) interviews of project directors and PD facilitators, and 3) gathering participation data from projects.

□ Sample. The focus of this report is on the professional development programming of the 26 projects that received grants through the Michigan Eisenhower Higher Education Competitive Grants Program for 1999-2000. Grants were awarded in Fall 1999 for a one year period, with the option of a 6-month extension to continue through Spring 2001.

Grants were awarded in four categories (number in parentheses is number of grants awarded in that category):

Mathematics (4)
 Science (6)
 Both Mathematics and Science (9)
 Other Core Subjects (7)

Fifteen Michigan institutions of higher education received grants (number in parentheses is number of grants received):

Central Michigan University (3)
 Eastern Michigan University (3)
 Ferris State University (2)
 Grand Rapids Community College (1)
 Lawrence Technological University (1)
 Michigan State University (3)
 Michigan Technological University (1)
 Northern Michigan University (1)
 Northwestern Michigan College (1)
 Oakland University (1)
 Saginaw Valley State University (2)
 University of Michigan--Ann Arbor (3)
 University of Michigan--Dearborn (2)
 Wayne State University (1)
 Western Michigan University (1)

Grants ranged from \$26,000 to \$145,000; 9 between \$25-60,000; 6 between \$61-85,000; 8 between \$86-100,000; and 3 more than \$100,000.

□ Findings. Findings are organized around a set of questions related to professional development programming among the higher education grantees.

□ How many teachers were served by grantees? Based on data provided by grantees (23 of the 25 reported), there were 1,125 teachers served from 374 different schools. In addition, 57 preservice teachers were served by grantees. (See separate report on high poverty and unaccredited schools served by grantees.)

□ How much professional development was provided by grantees? The findings that follow are based on information provided by 18 of the 25 higher education grantees.

- 9 projects conducted programs in both summer and during the school year; 6 projects conducted programs during the school year only; 3 projects conducted programs during the summer only.
- All projects conducted multiple sessions. During the summer, projects provided from 3-18 full days of programming; during the school year from 3 to 22 half or full-day sessions (there were also 28 sessions of 1.5 hours in length).

- A total of 79 full day sessions of professional development was provided by the 18 reporting projects during summer; 141 half to full day sessions during the school year (plus 72 sessions 1.5 hours in length).
- A total of 689 hours of professional development was provided by the 18 reporting projects during summer; 665 were provided during the school year.
- The total number of 721 hours of professional development programming were provided across the 18 reporting projects.

❑ **What was the quality of instructional and management practices in the professional development and training sessions?** Evaluators observed 27 professional development sessions among 24 of the 25 higher education grantees (more than one session was observed in some projects). The length of the observation was from 3 to 6 hours, depending on the schedule for the sessions.

An observation debriefing instrument was used to analyze what was learned. The six-part instrument provides observers with a systematic way to assess the key elements of a session by scoring a set of criteria in each section on a 7-point scale. The criteria are based on state and national standards for professional development. The six components of the instrument include: Planning/Organization, Implementation, Content, Pedagogy/ Instructional Materials, Leadership, and Session Culture/Climate. The debriefing instrument is a modification of one developed by the National Science Foundation Local Systemic Change program.

Observers rated each indicator on a scale of 1 to 7, with 1 = low rating and 7 = high rating for that item. In the findings below for each category, the percentages presented represent the lessons that received a 6 or 7 rating. Only three sessions observed had major components designed to increase leadership capacities of participants. Ratings for leadership indicators are not included in this report.

➤ **Planning and Organization of the Session**

- 74% of sessions were organized to effectively encourage a collaborative approach to learning.
- In 67% of sessions, enough time and adequate structure were provided for "sense-making," including reflection about concepts, strategies, and issues.
- In 67% of sessions, enough time and adequate structure were provided for participants to share experiences and insights.

➤ **Implementation of the Session**

- In 74% of sessions, formal presentations were carried out very effectively.
- In 81% of the sessions, the facilitator's contributions to the session strongly enhanced the quality of the session.
- In 65% of sessions, facilitators were very effective in modeling questioning strategies likely to enhance participant conceptual understanding. There was an emphasis on higher-order questions, appropriate use of "wait time," etc.
- In 56% of the sessions, the facilitator's management style strongly enhanced the quality of the session.

➤ **Content of the Session**

- In 78% of sessions, content was very sound and appropriately presented and/or explored.
- During 78% of sessions, there was high intellectual engagement of participants with the important ideas of the session.
- In 92% of the sessions, facilitators show a good understanding of the core concepts that were the focus of the session.
- In 67% of the sessions, there was good attention to the topical content and it was appropriate for the purposes of the session and participant needs.

➤ **Pedagogy and Instructional Materials**

- In 70% of sessions, there was good depth and breadth of attention to participant thinking and was appropriate for the purpose(s) of the session.
- In 74% of sessions, there was good depth and breadth of attention to classroom strategies and were appropriate for the purpose(s) of the session.
- In 74% of sessions, there was good depth and breadth of attention to instructional materials intended for classroom use and were appropriate for the purpose(s) of the session.
- In 70% of sessions, facilitators show a strong understanding of pertinent pedagogical concepts.
- During 74% of lessons, participants were very engaged with the important ideas of the session relevant to classroom practice

➤ **Session Climate and Culture**

- During 67% of the lessons observed, active participation of all was encouraged and valued. All participants were actively engaged in the activities and tasks, with the facilitator making specific efforts to engage all students.
- During 67% of lessons, facilitators were very respectful of and valued participant ideas, questions, and contributions to the session.
- In 67% of sessions observed, interactions among participants reflected strong collaborative working relationships. Students readily worked in pairs and small groups or as teams.
- In 67% of sessions observed, interactions between participants and facilitator reflected a strong collaborative working relationship. The facilitator and participants work together to solve problems, seek answers to questions, and address issues.
- During 52% of sessions, participants were strongly encouraged to generate ideas, questions, and conjectures.
- In 63% of sessions, participants showed a strong willingness to share ideas and take intellectual risks.
- In 44% of sessions, intellectual rigors, constructive criticism, and the challenging of ideas were clearly evident.

☐ **Were Michigan Curriculum Framework standards and benchmarks addressed in professional development programming provided by grantees?** From interviews of project staff, all projects have incorporated the use of the Michigan Curriculum Framework in some way in their professional development, from raising teacher awareness of the document and its content to actually using the Framework to develop lessons. Examples of how the Framework was incorporated:

- Participants identify benchmarks to address in lesson plans they develop
- Critiquing video lesson segments to determine what benchmarks are being addressed
- Speakers discuss how they use Framework to guide their curriculum and lessons
- Lessons and units used in the sessions show relationship to benchmarks
- Participants created lessons based on particular benchmarks and presented lessons to colleagues
- Examples of how to address particular benchmarks provided
- Technology content standards addressed; web materials identified for use correlated with benchmarks
- Use of Framework toolkits
- Relationship of MEAP test questions to benchmarks
- Adapt/modify current lessons so they better address benchmarks
- How to address fine arts benchmarks and science benchmarks concurrently

☐ **How were Michigan Professional Development standards addressed in the programming?** Project director and staff interview data indicate that about half of the projects have made specific efforts to organize and implement their programming based on PD standards. Based on observation of PD sessions, most projects are conducting their programs in a way that is consistent with the Michigan PD standards, even though it may not be a conscious effort. The nature and quality of most sessions is high (see discussion above about quality of sessions observed).

Although all projects are based on either global or specific needs assessments of teachers and other constituents, those projects working closely with one or a few schools or districts are better able to customize programming. All projects make efforts to accommodate individual needs of teachers.

☐ **According to grantee staff, how are programs likely to affect changes in instruction or other classroom practice among participating teachers?** Based on interviews with project directors and staff, the following kinds of effects were identified.

Inservice Teachers

- Participants more comfortable with investigative approaches to teaching and learning
- Teachers using non-traditional approaches to teaching core content
- Lessons and other materials provided through the program being used by teachers
- The way participants now see their roles as facilitators of classroom instruction
- With an increased understanding of science concepts, teachers are better able to help their students learn the concepts
- Teachers better able to access information and instructional materials about science topics
- Raise teacher awareness of how to use technology as a tool for learning
- Teachers will have another tool for providing inquiry-based science
- Teachers use an integrated approach in using social studies topics to provide real-world context for mathematics and science investigations

- Teachers will use more cooperative learning to engage girls and minorities in learning of science and mathematics
- Change classroom practice to meet the needs of all learners
- Teachers will have strategies to help improve student learning and test scores
- Improved understanding of the Michigan Curriculum Framework standards and benchmarks and how to address them in classrooms
- Teachers will have ideas for engaging middle school students in learning
- Teachers more receptive to alternative ways of teaching science and mathematics

Pre-Schoolers and Parents

- Participants have tools to help them better understand how preschool children learn mathematics
- Teachers can better educate parents to think of mathematics as a regular part of their child's daily life
- Teachers will have ideas about how to engage parents and families in science activities

Leadership

- Teams have developed action plans for improving their science or mathematics program

Preservice Teachers

- Preservice teachers using techniques learned in the program in their own classrooms
- Cooperating inservice teachers affected by the enthusiasm of preservice teachers using investigative approaches with their students

□ According to grantee staff, what are the strengths and limitations of their programming?

Project directors and staff were asked to identify strengths and limitations of their projects. A summary of comments follows.

Strengths:

- Sustained professional development over the course of the grant
- One-on-one follow-up with teachers in their classrooms
- A large cadre of skilled inservice teachers to work with preservice teachers
- Multiple locations for PD sessions so participants exposed to different sites
- Focus on an interdisciplinary approach to science
- Teachers actually conduct lessons during training and then again in their own classrooms during the school year
- Opportunities for teachers to share with each other
- Programming to strengthen physics teaching
- Strong science content
- Enthusiasm of presenters and participants
- Providing a relaxed atmosphere in which to work
- Teams of teachers and administrators working together
- Interactions of experienced and novice teachers on the use of computers
- Connecting mathematics to real-world situations
- Non-threatening and engaging activities and sessions
- Experienced staff, proven activities
- Materials distributed to participants
- Sessions focused on topics as requested by teachers
- Connecting the Framework with MEAP
- Connecting science and the arts

Limitations:

- Need more administrators involved in program; more administrative support for teachers as they participate in the program
- Administrator lack of understanding about role of preschool in the learning process, particularly for at-risk children
- Not enough time to have preservice teachers conduct more than one or two lessons in the classroom
- Difficulty recruiting teachers to participate, given the time frame of the project and the timing of awards
- Teachers not willing to make major summer commitment to multi-week session
- Difficulty of participants to be able to overcome inertia of their school settings
- Need to engage more schools and teachers in the programs
- More difficult to engage teachers in school year sessions because of busy schedules
- Difficulty getting release time for teachers during the school year
- Maintaining networking of teachers after summer sessions
- Turnover of teachers in particular districts hampers implementation of intended programs

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