

CHAPTER 7

CONCLUSIONS AND LESSONS FOR THE EISENHOWER PROGRAM

This is the second report of the National Evaluation of the Eisenhower Professional Development Program, Part B (Title II of the Elementary and Secondary Education Act). The first report was based on six exploratory case studies of school districts conducted during the first months of the evaluation (Birman, Reeve, & Sattler, 1998). The purpose of that report was to obtain an initial description of the program and the issues that it faced in different local contexts. This second report describes the current status of the program, based on data from national probability samples of districts, State Agency for Higher Education (SAHE) grantees, and teachers, as well as on data from 10 in-depth case studies in five states. The third report of the evaluation, to be issued in early 2000, will augment the cross-sectional results reported here with a longitudinal account of teachers' experiences in Eisenhower and other professional development activities and changes in their teaching practices.

The Eisenhower Professional Development Program is the U.S. Department of Education's largest investment that is solely focused on improving the quality of teaching practice. Part B of the Eisenhower Professional Development program, with a 1999 appropriation of approximately \$335 million, provides funds through states to school districts and institutions of higher education and nonprofit organizations. These funds primarily support professional development in mathematics and science.

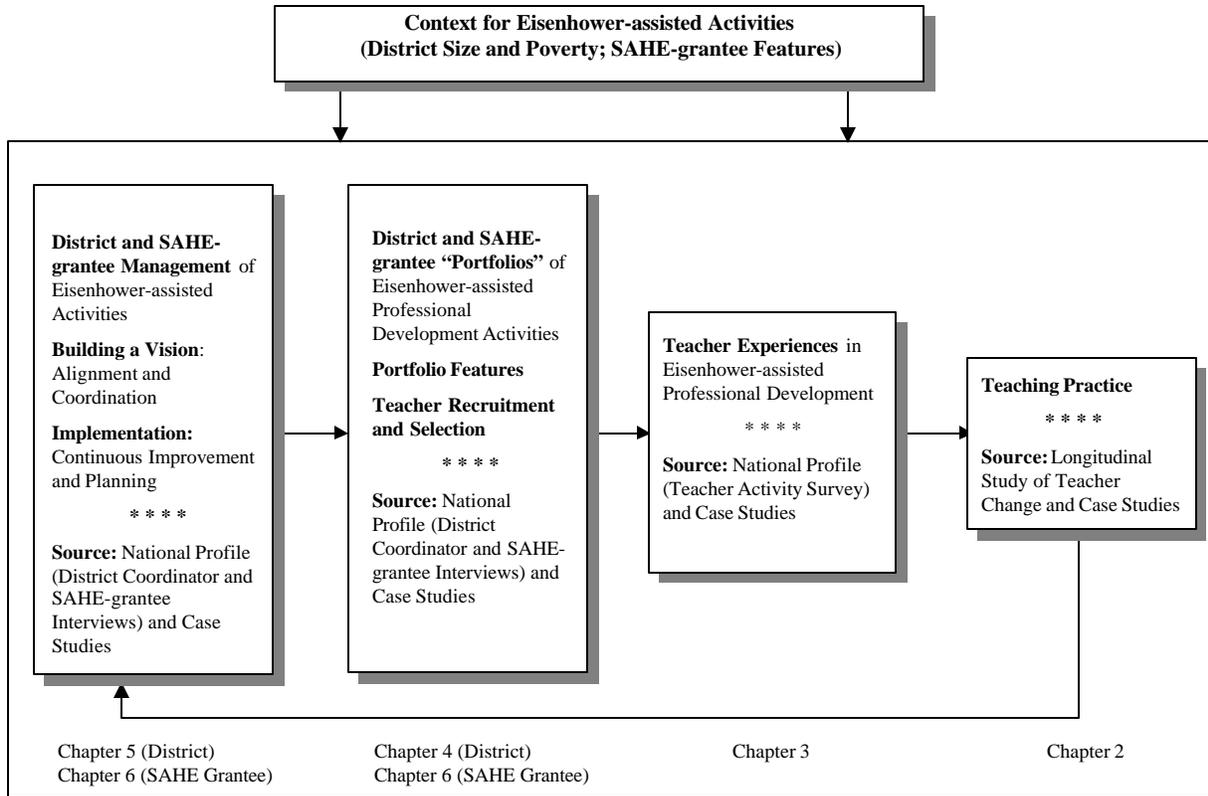
In its 1994 reauthorization of the program, Congress made explicit that Eisenhower-assisted professional development activities should be designed to improve teacher practice and, ultimately, student performance. The law also places particular emphasis on serving teachers in schools with high poverty rates. Furthermore, the reauthorized Eisenhower program embodies policymakers' intention that the program support systemic education reform and deeper learning among teachers.

In the analyses conducted for this report, we examine the extent to which these intentions have been achieved. Our conclusions about the effectiveness of the Eisenhower program are divided into four main parts. First, we ask, what is the nature of current classroom teaching practices in mathematics and science, and what directions does current classroom practice suggest for professional development (Chapter 2)? Second, what evidence do we find that teachers experience high-quality professional development in Eisenhower-assisted activities (Chapter 3)? Third, what evidence do we find that districts develop their portfolios of professional development activities and manage and operate their projects in ways consistent with the intent of the legislation (Chapters 4 and 5)? Fourth, how well do SAHE grantee projects perform with respect to the requirements and intent of the legislation (Chapter 6)?

These major areas correspond to the main elements in our conceptual framework for the evaluation (see Exhibit 7.0).

EXHIBIT 7.0

Conceptual Framework for This Evaluation



In the following section, we briefly review the data on which our evaluation is based. Then, we turn to the main conclusions and implications of the study.

STRENGTHS OF THE DATA

Before considering the findings of the National Evaluation of the Eisenhower Program, it is important to take stock of the quality of the data on which the findings rest. The data set has a number of important strengths. First, our descriptions of the nature and quality of professional development provided through the Eisenhower program are based on national probability samples, each with an excellent response rate. The national probability sample of district programs and SAHE grantees has an 88 percent response rate for district program coordinators and 87 percent for SAHE grantees. The national probability sample of teachers who participated in Eisenhower professional

development activities has a response rate of 72 percent. The 72 percent response rate is especially high when considering the multistage process necessary to complete the sample.¹

Second, the two probability samples are complementary. Data from our telephone interviews with district program coordinators and SAHE-grantee project directors are backed up by teacher participant accounts of what they experienced and its quality.

Finally, we have taken a number of steps to maximize the validity and reliability of the national survey data. For example, although the telephone interview and teacher survey data are based on self-reports, most of the data represent an accounting of behaviors, not direct judgments of quality that might be more likely biased in a positive direction. In addition, the survey results are cross-validated through case study data that are rich in potential to explain the descriptive statistics and path analyses from the surveys.

The three strands of the evaluation are designed to produce an integrated portrait of the Eisenhower program from many perspectives. Because the evaluation involves a variety of research methods and has collected data from groups of individuals who view Eisenhower-assisted activities from different vantage points, it is able to provide an accurate description of program-funded activities and analyses of the features of these activities and their effects on teacher practice.

The data we analyze in this report do not provide direct estimates of changes in teaching practice over time. Our conclusions about the effectiveness of Eisenhower-assisted professional development are based on teachers' reports of the extent to which participation enhanced their knowledge and skills and improved their teaching. Data from the second and third waves of our longitudinal study, to be examined in our third report, will provide additional information on teacher change.²

None of our analyses address directly how teacher participation in Eisenhower professional development leads to gains in student achievement. The work reported here, however, is not completely divorced from student achievement. The characteristics of professional development on which project directors and teacher participants reported in the surveys are carefully grounded in the available literature on professional development and student achievement. To the extent that the Eisenhower program provides professional development with characteristics identified as effective in the literature, we conclude that they are of high quality, and we tentatively infer that they should lead to benefits for students.

¹ District coordinators and SAHE-grantee project directors had to submit the complete list of professional development activities provided during the prior year and the number of participants. Two activities were selected from each district with probability in proportion to size, and from those, complete rosters of teachers were collected from which two teachers were randomly selected and surveyed.

² We also took a number of steps to maximize the validity and reliability of the evaluation's national survey data. For example, most of the survey questions ask teachers and administrators to provide an accounting of behaviors, not direct judgments of quality that might be more likely to be biased. The substantial variation in the responses teachers and district administrators provided to these behavioral items, as well as the consistency in teacher and district administrator responses, tends to bolster our confidence in the validity of the data.

CURRENT TEACHING PRACTICES IN MATHEMATICS AND SCIENCE

The first analyses presented in this report focus on what we have learned from the baseline wave of our longitudinal survey about teachers' classroom practices in mathematics and science at the elementary, middle, and high school levels. The data for these baseline analyses, which are presented in Chapter 2, are from teachers in 30 schools, across 10 districts in five states. Teachers reported on the content they taught and their pedagogical practices for the 1996-97 school year. In addition, as part of our case studies, we conducted classroom observations of two teachers in each of the 30 schools.

These data allow us to identify weaknesses in classroom practices that might appropriately be addressed by Eisenhower-assisted professional development activities. One standard we used to judge the quality of teacher classroom practices is the degree of alignment with the National Assessment of Education Progress (NAEP). The content tested on the NAEP is one appropriate standard against which to judge the quality of content offered in our nation's classrooms because the NAEP is considered to be the nation's report card. The National Education Goals Panel uses the NAEP to monitor progress against our national education goals. The NAEP is, of course, not without its critics. Some would like the NAEP to be more aligned with the National Council of Teachers of Mathematics (NCTM) mathematics standards and National Research Council (NRC) science content standards. Others would like the NAEP to place a heavier emphasis upon what they see as more basic skills.

To allow comparisons to the NAEP, we obtained all mathematics and science items for NAEP assessments in grades 4, 8, and 12. We then conducted content analyses of these items using the same descriptors of content that were used in the questionnaires completed by teachers. A useful byproduct of this work is the description of the content tested on the NAEP mathematics and science assessments. The two-dimensional content maps we prepared, focusing on the topics and student performance goals tapped by the NAEP items, provide an easily-interpreted picture of the content emphasized on the NAEP, as well as the content not tested.

Our findings on current teaching practice are consistent with other research, especially the Third International Mathematics and Sciences Study (TIMSS). We find that teachers in our 30 case study schools cover a broader range of content, in less depth than is reflected in the NAEP. Teachers might be characterized as teaching for exposure rather than mastery. We find a disturbingly slow-moving curriculum. Much of the content taught at one grade is repeated in the next. Like TIMSS, we find teachers not covering key content areas on which student achievement has been shown to be weak. For example, we find little teacher emphasis on geometry and measurement in mathematics. In contrast, we find teachers emphasizing basic topics, such as number sense and calculation, to a greater extent than is found on NAEP. The emphasis on basic topics is especially true in high-poverty schools.

One positive finding is that teaching practices appear to be moving toward a better balance across performance goals for students. In earlier surveys of teachers' practices, a greater emphasis was found to be given to student memorization of facts and mastery of low-level algorithmic skills, while less emphasis was given to students' ability to apply their knowledge and to communicate with others (Porter et al., 1993). Our longitudinal study baseline data show a much more balanced emphasis in instruction across these varying performance goals.

While our survey findings concerning content are supported in part by our observations of teachers, they also occasionally are challenged. When our observations reveal differences between what we saw and what teachers report, the differences tend to be in the direction of teachers' over-reporting solving novel problems and applying mathematics and science to real-world situations. Still, our observations are largely supportive of the descriptions of classroom practices provided by teachers in response to the survey questions. As reported by Cohen (1990), teachers appear to be getting the message from national professional content standards that better balance needs to occur across performance goals, and they are trying to move in that direction. In at least some cases, however, their practice is not yet there.

Our findings about teacher classroom practices are important in two respects. First, the inadequacies identified in current instruction suggest important targets for Eisenhower and other professional development. Second, the weaknesses in instruction we have identified represent areas in which we hope to track improvement over time, using our longitudinal study, and to relate whatever improvement is observed to characteristics of professional development experienced by the teachers.

TEACHERS' EXPERIENCES IN EISENHOWER-ASSISTED ACTIVITIES

We examined teachers' experiences in Eisenhower-assisted activities in three ways. First, we assessed the effectiveness of Eisenhower-assisted activities by asking teachers to report on the extent to which participation enhanced their knowledge and skills. Next, we examined the quality of Eisenhower-assisted activities, by assessing the extent to which supported activities share features of quality identified in the literature on professional development. Finally, we used our data to assess the strength of the relationship between features of the activities in which teachers participated and teachers' self-reported outcomes.

Effectiveness of Eisenhower-Assisted Professional Development Activities

To measure the effectiveness of Eisenhower-assisted professional development activities, we asked teachers to report on the extent to which participation enhanced their knowledge and skills in six domains: (1) in-depth knowledge of mathematics/science; (2) curriculum; (3) instructional methods; (4) approaches to assessment; (5) use of technology; and (6) approaches to diversity.³

When asked directly, many teachers in SAHE-grantee activities and somewhat fewer teachers in district activities report that participation in Eisenhower-supported professional development has led to enhanced knowledge and skills and changes in their classroom teaching practice. For enhanced knowledge and skills, we asked teachers questions about six domains, ranging from enhanced knowledge of mathematics and science, to instructional methods, to approaches to diversity. For example, 48 percent of teachers in district activities and 68 percent of teachers in SAHE-grantee activities report enhanced in-depth knowledge of mathematics or science; and 63 percent of teachers in district activities and 79 percent of teachers in SAHE-grantee activities report enhanced knowledge of instructional methods. Percentages are lower for use of technology and

³ The term "Eisenhower-assisted activities" reflects the fact that district Eisenhower funds can support some or all of the cost of professional development activities.

approaches to diversity. Similarly, we asked about improvement in classroom practice, and the percentages were parallel. Once again, there is considerable variability among activities in reported change in practice, and teachers in SAHE-grantee activities report somewhat more change in practice than do teachers in district activities. Overall, our data on knowledge and skills and change in teaching practice suggest that teachers believe they are benefiting from their participation in Eisenhower-assisted professional development.

A comparison of our data for SAHE-grantee activities with the results obtained for 34 exemplary summer institutes in mathematics and science, supported by the National Science Foundation, the Department of Education, and other agencies, indicates that teachers participating in SAHE-grantee activities report enhancement of knowledge and skills in mathematics and science content roughly comparable to the results for the 34 exemplary activities.⁴ SAHE-grantee activities meet benchmarks for reported teacher outcomes set by other exemplary professional development programs. Teachers participating in district Eisenhower activities, however, show weaker results than do teachers in the 34 exemplary activities.

The Quality of Eisenhower-assisted Activities

Our analysis of the quality of Eisenhower-assisted professional development activities, which appears in Chapter 3, is grounded in the recent literature on the characteristics of professional development. Over the past decade, a considerable literature has emerged on professional development, teacher learning, and teacher change (Corcoran, 1995; Darling-Hammond, 1995; Hargreaves & Fullan, 1992; Hiebert, 1999; Lieberman, 1996; Little, 1993; Loucks-Horsley et al., 1998; Richardson, 1994; Sparks & Loucks-Horsley 1989; Stiles, Loucks-Horsley, & Hewson, 1996). The research literature contains a mix of large- and small-scale studies, including intensive case studies of classroom teaching, evaluations of programs designed to improve teaching and learning, and surveys of teachers about their pre-service and in-service preparation and in-service professional development experiences. In addition, there is a large literature describing "best practices" in professional development, drawing on expert experiences.

Despite the size of the literature, however, relatively little systematic research has been conducted on the *effects* of professional development on improvements in teaching or on student outcomes, and very little has been conducted comparing the effects of *alternative forms* of professional development. The research that has been conducted, however, along with the experience of expert practitioners, does provide some preliminary guidance about the characteristics of high-quality professional development (See Loucks-Horsley, 1998.) In particular, several recent studies suggest that professional development that focuses on specific mathematics and science content and the ways students learn such content is especially helpful (Cohen and Hill, 1998; Kennedy, 1998). To measure the quality of Eisenhower-assisted activities, we integrated and operationalized the ideas in the literature on "best practices" in professional development.

⁴ See Carey, N., & Frechtling, J. (1997, March). *Best practice in action: Follow-up survey on teacher enhancement programs*. Arlington, VA: National Science Foundation. Carey and Frechtling indicate that 44 percent of participants in outstanding teacher development programs reported that the programs enhanced their knowledge and understanding of science content to "a great extent" (value of 5 on their 5-point scale). If we isolate the percentage of participants in SAHE-grantee activities who reported that the activity enhanced their mathematics or science knowledge "to a great extent" (value of 5 on the 5-point scale), the percentage is 41 percent. The comparable percent for district activities is 24 percent.

As we reported in Chapter 3, we focus on three “structural features,” or characteristics of the structure of a professional development activity. These structural features include:

- ◆ the form or organization of the activity—that is, whether the activity is organized as a **reform type**, such as a study group, teacher network, mentoring relationship, committee or task force, internship, individual research project, or teacher research center, in contrast to a traditional workshop or conference;
- ◆ the **duration** of the activity, including the total number of contact hours that participants are expected to spend in the activity, as well as the span of time over which the activity takes place; and
- ◆ the degree to which the activity emphasizes the **collective participation** of groups of teachers from the same school, department, or grade level, as opposed to the participation of individual teachers from many schools.

In addition to these structural features, we focus on three “core features” or characteristics of the substance of the professional development experience itself:

- ◆ the degree to which the activity has a **content focus**—that is, the degree to which the activity is focused on improving and deepening teachers’ content knowledge in mathematics and science;
- ◆ the extent to which the activity offers opportunities for **active learning** -- that is, opportunities for teachers to become actively engaged in the meaningful analysis of teaching and learning, for example, by reviewing student work or obtaining feedback on their teaching; and
- ◆ the degree to which the activity promotes **coherence** in teachers’ professional development, by incorporating experiences that are consistent with teachers’ goals, aligned with state standards and assessments, and encouraging of continuing professional communication among teachers.

We used these structural and core features to judge the extent to which the Eisenhower program supports high-quality professional development. We found that most Eisenhower-assisted activities are traditional in form, such as workshops, courses, or conferences; and relatively few Eisenhower-assisted activities are reform types of activities, such as study groups, networks, or mentoring relationships. About 79 percent of teachers in district activities are in traditional types of activities— primarily workshops and conferences. About 76 percent of teachers in SAHE-grantee activities are also in traditional activities—primarily workshops and college courses. In contrast, approximately 22 percent of teachers in district activities and 26 percent in SAHE-grantee activities are in reform activities, including teacher networks, study groups, mentoring, committees and task forces, internships, and resource centers.

On average, SAHE-grantee activities are of longer duration than district activities. The average amount of time teachers in district activities report spending in Eisenhower-assisted activities is 25 hours, compared to 51 hours for teachers in SAHE-grantee activities. However, while district activities are shorter than SAHE-grantee activities, the average length of district activities, in

hours, has approximately doubled since the last evaluation was conducted in 1988-89.⁵ In addition, a higher percentage of SAHE-grantee activities than district activities span an extended period of time. For example, 46 percent of teachers in SAHE-grantee activities are in activities lasting at least six months, including 2 percent lasting more than one year, 20 percent lasting 10-12 months, and 24 percent lasting 6-9 months. Twenty percent of teachers in district activities are in activities lasting at least six months.

On the third structural feature, collective participation, districts outperform SAHE grantees. Although relatively few district or SAHE-grantee activities emphasize the collective participation of teachers from the same department, grade level, or school, district activities give more emphasis to collective participation than do SAHE-grantee activities. Twenty percent of teachers in district Eisenhower-assisted activities report participating with other teachers in their department or grade level, compared to 7 percent of teachers in SAHE-grantee activities; and 19 percent of teachers in district activities report participating with all teachers in their school, compared to 11 percent of teachers in SAHE-grantee activities.

On the last three dimensions of quality—content focus, active learning, and coherence—we find that SAHE-grantee professional development is more likely to place an emphasis on these features than district professional development.

Two thirds of teachers participating in SAHE-supported Eisenhower activities participate in activities that place a major emphasis on content, compared to fifty-one percent of teachers in district Eisenhower-assisted activities. Similarly, the percentage of teachers reporting a major emphasis on each of 18 separate indicators of active learning is higher for SAHE grantees than for districts, but relatively few teachers in either district or SAHE-grantee activities report some elements of active learning. For example, only 5 percent of teachers in district activities and 16 percent of teachers in SAHE-grantee activities report that their teaching was observed by the activity leader.

Teachers in both district and SAHE-grantee activities report that the activities have elements that promote coherence with other aspects of their professional experiences. For example, more than three quarters of teachers in both district and SAHE-grantee activities report that their activities are aligned with state and district standards. Somewhat more teachers in SAHE-grantee than district activities, however, report that their Eisenhower activities built on prior professional development (39 percent compared to 31 percent) or were followed up with later activities (70 percent compared to 53 percent).

Our main finding is that there is enormous variability in quality among Eisenhower-assisted activities. This is not surprising, given that the Eisenhower program operates as a funding stream within broad guidelines. A great deal of discretion is left to districts and SAHE grantees to decide on the nature of the professional development that they will provide, though SAHE grantees have to design programs within the constraints of the SAHE's competition. The variability in quality indicates that some districts are providing the same kinds of high-quality professional development activities that SAHE grantees provide. For example, although many district activities are short, 2 percent of teachers in district activities are in activities spanning more than one year, 8 percent are in activities lasting 10-12 months, and 10 percent are in activities lasting 6-9 months. That some

⁵ The 1988-99 evaluation collected data on duration from districts rather than teachers, so a comparison of results from the 1988-89 and the current evaluation should be interpreted as providing an indication of the general magnitude of the change rather than a precise numerical estimate (see Knapp et al., 1991).

districts provide activities of extended duration, with collective participation, a major focus on content knowledge, a major emphasis on active learning, and coherence with teachers' other experiences, represents an “existence proof” that it is possible for districts to provide such activities.

We do not know, however, whether all districts possess the organizational capacity and staffing to provide quality professional development. Districts lacking capacity may well be able to purchase high-quality professional development (e.g., from institutions of higher education) if they are aware of and insist upon the dimensions of quality we have identified.

Finally, the average differences in quality we observe between district and SAHE-grantee activities are associated with parallel differences in cost. Thus, we conclude that high-quality professional development is more expensive than lower-quality professional development. SAHE grantees spend over twice as much per teacher participant as do districts. We estimated that SAHE grantees spend about \$512 per participation, in comparison to \$185 per participation for districts.⁶ High-quality professional development is more expensive.

Why the SAHE-grantee activities are of higher quality, on average, than the district activities is not completely clear. One possible explanation is that districts receive a formula allotment while the SAHE grantees must compete for their award. Both the competition and the SAHE guidelines for the competition may push in directions of higher quality.⁷ In addition, IHE/NPOs may, on average, possess more state-of-the-art knowledge about the attributes of high-quality professional development than districts do, and they may have greater capacity to deliver professional development with these attributes. Finally, as noted, high-quality professional development is considerably more expensive per participation. Undoubtedly, districts feel a responsibility to provide professional development to all of their teachers. This may push them in the direction of professional development with lower costs per participation.

Features of Professional Development that Promote Improvements in Teaching

We used our national probability sample of teachers who participated in Eisenhower-assisted professional development to estimate the strength of the relationships among features of the professional development and self-reported teacher outcomes—enhanced knowledge and skills and changed teaching practice. Our analyses, reported in Chapter 3 (Exhibit 3.21), estimate standardized path coefficients while controlling for the subject area of the professional development experience (mathematics or science); school poverty, percent minority, and grade level; and teacher gender, certification, and years of experience.

We find that activities with more positive structural features tend to provide professional development experiences with more positive core features, which in turn tend to produce more positive teacher outcomes. In particular, activities of longer duration, both in time span and in contact hours, tend to place more emphasis on content than shorter activities, provide more opportunities for active learning, and provide more coherent professional development. Activities with more collective participation also tend to provide more opportunities for active learning and

⁶ A “participation” is a teacher participant in an Eisenhower-assisted activity. Teachers who participate in more than one activity are counted separately for each activity in which they participate. The dollar per participation figure for districts includes federal Eisenhower dollars only, and does not count the 33 percent matching requirement.

⁷ We were not able to conduct a systematic analysis of SAHE competitions.

offer more coherent professional development. The three core features, in turn, all have independent effects on teachers' reports of enhanced knowledge and skills. Teachers who participate in activities that place a major emphasis on mathematics and science content, for example, are substantially more likely to report enhanced knowledge and skills than teachers in activities that do not emphasize content. (For a more complete description, see Chapter 3.)

Thus, our results expand the existing literature by providing empirical support for the contention that professional development that emphasizes content knowledge, active learning, and coherence leads to enhanced teacher knowledge and skill and change in teacher practice. In addition, our results highlight the importance of professional development that engages teachers for an extended number of contact hours, and that spans several months, as opposed to being concentrated in a few days or weeks.

Our results also support the literature in indicating that reform types of professional development tend to produce more positive outcomes than traditional types, but the effect is smaller than we had anticipated. In our analyses, we find effects of the distinction between traditional and reform activities, and they are in the predicted direction, but they are generally not direct effects on teacher outcomes. Rather, the effect of reform versus traditional professional development activities operates indirectly through the structural and core features identified above. That is, *reform activities tend to produce better outcomes primarily because they tend to be of longer duration*. Traditional and reform activities of the same duration tend to have the same effects on reported outcomes. Further, we find a large amount of variability within both traditional and reform-type activities. Traditional activities sometimes have positive characteristics, such as opportunities for active learning, and reform activities sometimes have negative characteristics, such as limited duration.

Further, our analyses show that *the difference between districts and SAHE grantees, in terms of enhanced teacher knowledge and skill and greater change in teacher practice, is explained almost entirely by the SAHE grantees' placing a greater emphasis upon duration, subject-matter content, active learning, and coherence*. In short, if districts placed a greater emphasis upon these characteristics, we would hypothesize that teachers would report their knowledge and skill enhanced to the same extent as teachers in SAHE-grantee activities, and that they would be just as likely to report changing their teaching practice.

DISTRICT MANAGEMENT AND OPERATION OF EISENHOWER-ASSISTED ACTIVITIES

We now turn from describing teachers' experiences in Eisenhower-assisted activities to a description of the ways that districts *manage and operate* their Eisenhower programs. Each district receiving Eisenhower funds generally uses the funds to support a collection of professional development activities. The collection of professional development activities that a district supports with Eisenhower funds can be viewed in its entirety as its "portfolio" of Eisenhower-assisted professional development activities. In our analysis, we examine the factors that influence the quality of the portfolios of professional development activities that districts offer and the extent to which districts engage in efforts to target teachers of high-need students.

The measures we use to characterize the quality of a district’s portfolio of Eisenhower-assisted activities are: (1) the percent of participations in reform types of activities, (2) the average span of time of activities (i.e., number of days, weeks, or months), (3) the number of opportunities for active learning in in-district workshops and institutes, and (4) the degree of collective participation in in-district workshops and institutes.⁸

In assessing district management and operations, we focus on the role of several provisions emphasized in the legislation: (1) the *coordination (co-funding)* of Eisenhower-assisted activities with other sources of funding for professional development; (2) the *alignment* of Eisenhower-assisted activities with state and district standards and assessments; (3) the *participation of teachers* and school-level staff in planning Eisenhower-assisted activities; and (4) the use of a process of *continuous improvement*, including monitoring progress against measurable objectives and performance indicators.

The Relationship of District Management and Features of Professional Development

In Chapter 5, we report the results of a path analysis of the relationship between these provisions of the legislation and the characteristics of quality professional development that districts provide. The path analysis is based on a national probability sample. Our path analysis of district professional development portfolios (Exhibit 5.11) controlled for district size, poverty level, consortium, and cluster status. We began our analysis of districts by examining co-funding (one aspect of coordination) and alignment. Consistent with the literature on systemic reform (e.g., Fuhrman, 1993; Smith & O’Day, 1991), we find that *co-funding* Eisenhower professional development activities with other professional development initiatives has important direct and indirect effects on the quality of the Eisenhower-assisted professional development offered by districts. For example, districts that engage in more co-funding of Eisenhower activities with other programs tend to support a greater proportion of reform activities than districts that engage in less co-funding, and they tend to provide more opportunities for collective participation. In addition, districts that engage in more co-funding tend to engage in more extensive continuous improvement efforts, and they tend to involve teachers more widely in planning, both of which are related to increased opportunities for active learning. *Alignment* of professional development with state and district standards and assessments also has positive effects. Districts that align professional development with standards and assessments are more likely to offer reform types of activities. In addition, these districts are more likely than others to engage in continuous improvement, which is related to increased opportunities for active learning. These results (along with others reported in Chapter 5) lead us to conclude that the intentions of the program concerning strategies such as co-funding, alignment, continuous improvement, and teacher involvement in planning are appropriate, in the sense that they appear to lead to higher-quality professional development.

Thus, through analyses of our data, we find support for the appropriateness of the key provisions of the Eisenhower legislation. Generally, these provisions tend to encourage districts to

⁸ The data from our national sample of teachers show that each of these dimensions is related, either indirectly or directly, to improvements in teachers’ knowledge and skills and changes in teaching practice; thus, we consider each of these dimensions as an indicator of high-quality professional development, whether it has a direct effect on teacher outcomes, or operates indirectly (e.g., a reform approach affects teacher outcomes indirectly through its effect on duration).

offer professional development with effective structural and core characteristics, as identified in the literature and supported by our evaluation.

Variation Among Districts in Management and Operations

Given that co-funding, alignment, teacher participation in planning, continuous improvement, and targeting are intended features of the program, and given that our evidence indicates that these strategies generally lead toward higher-quality professional development, we ask to what extent each is being implemented (Chapter 4).

Co-funding and working closely with other federally supported professional development programs (where the programs are available) occur most often with professional development programs that have a mathematics and/or science focus similar to that of the Eisenhower program. Thus, working closely with other programs and co-funding is more likely between the Eisenhower program and National Science Foundation programs than it is with other Department of Education programs. For example, among teachers in districts with an NSF-funded Urban Systemic Initiative (USI) that supports professional development, over 80 percent are in districts where the Eisenhower project co-funds with the USI. Among teachers in districts with Title I, Part A funds, 50 percent are in districts where the Eisenhower project co-funds with Title I.

Most districts report being engaged in efforts to align Eisenhower-assisted professional development with standards and assessments. Alignment is more likely for state standards and assessments than it is for district standards and assessments and more likely for mathematics than science. In addition, Alignment is, however, more likely for standards than for assessments. This may reflect the fact that the ESEA requirement of aligned assessments had not yet gone into effect; alternatively, these results may reflect that districts first establish standards, and then seek to revise their assessments to be aligned with the newly developed standards.

The program intends that teachers participate in planning Eisenhower-assisted activities. Our results indicate that 99 percent of teachers are in districts that report involving teachers in planning professional development. Thus, we conclude that this provision of the law is relatively well-implemented. Still, our case-study data reveal that the Eisenhower legislation's 80/20 rule, calling for at least 80 percent of funds to be used "in a manner that is determined by such teachers and staff" and "to the extent practicable, takes place at the individual school site," is not well-understood and is sometimes not even known to exist. We conclude that this provision of the law could be clarified and given more emphasis in the information provided to projects from the Department of Education and from the states.

Our data suggest that the use of performance indicators to guide the continuous improvement process is not yet widespread in districts that receive Eisenhower funds. Fewer than one in five teachers are in districts that collect data on performance indicators established to guide district professional development efforts. One-third of the teachers are in districts that have developed such indicators. The majority of teachers are in districts whose Eisenhower coordinators are not aware that their state has performance indicators. Clearly, the development of state and district performance indicators is a goal of the program that is not generally being implemented, at least not yet. There are other ways in which districts show some commitment to continuous improvement. Needs assessments through teacher surveys and informal conversations are common. Nearly every district reports evaluating their professional development activities. These evaluations, however, are frequently based on teacher satisfaction surveys or participation counts. It is less common to use

observations of teachers' subsequent classroom practice to evaluate the effectiveness of Eisenhower professional development.

Districts report a strong emphasis on recruiting teachers from high-poverty, low-achievement schools, and slightly less emphasis on recruiting teachers from Title I schools. Despite these reported efforts at targeting, and even though districts with larger numbers of high-poverty students receive greater funding, teachers from high-poverty schools are only slightly more likely than others to participate in Eisenhower-funded activities. Apparently, current targeting strategies have limited effectiveness. Perhaps these results are explained, in part, by the fact that most participants in Eisenhower-assisted activities are volunteers and teachers from high-poverty schools are no more or less likely than other teachers to volunteer for professional development. It is possible that districts do not have adequate strategies to shape the incentives and constraints that determine which teachers volunteer.

Differences in Management and Operation of Eisenhower-assisted Activities by District Poverty and Size

Throughout our analyses of district data, we tested to see where the management and operation of Eisenhower-assisted professional development differ significantly according to the district poverty level or the size of the district. All of our analyses simultaneously controlled for size and poverty, so any effects are independent of one another. We also tested for the interaction between these two variables. Of the two variables, district size is much more frequently related to the nature of the Eisenhower professional development provided than is poverty. Generally, larger districts are more likely to provide high-quality professional development than are smaller districts. This is true for features of the activities provided—such as active learning, collective participation, and the span of time over which the activities extend—as well as district management strategies, including alignment with standards and assessments, frequency of co-funded projects, and a commitment to continuous improvement. Also, when several small districts form consortia to deliver Eisenhower professional development, the quality is higher in ways that parallel that for large districts. We speculate that larger districts and consortia have a better infrastructure and greater capacity to provide high-quality professional development. Higher-poverty districts also are more likely to co-fund Eisenhower professional development with other professional development, and they are more likely to be committed to continuous improvement. Large districts and high-poverty districts have a greater variety of funding sources in addition to Eisenhower, increasing opportunities for co-funding, and perhaps creating a complexity that demands a commitment to continuous improvement.

SAHE-GRANTEE MANAGEMENT AND OPERATION OF EISENHOWER-ASSITED ACTIVITIES

SAHE grantees are subject to the same provisions for alignment, continuous improvement, and targeting that districts must follow. However, SAHE grantees also are subject to some additional requirements or guidelines. In particular, the 1994 reauthorization emphasizes the importance of coordination between SAHE grantees and districts in planning and providing professional development. Each SAHE grantee is required to enter into an agreement with one or more districts

for the provision of professional development. Further, SAHE-grantee projects are shaped by the priorities and guidelines that the SAHE sets in structuring its competition for the Eisenhower awards.⁹

The Relationship of SAHE-grantee Management to Features of Professional Development

In Chapter 6, we report the results of our analyses of the relationship between intended program strategies, such as alignment, coordination, and continuous improvement, and the quality of the professional development that SAHE grantees provide. The path analysis is based on a national probability sample.

As reported in Chapter 6, Exhibit 6.26, coordination with districts (e.g., use of feedback mechanisms, support and extension of district activities, co-funding and district involvement in planning, implementing and monitoring) is positively associated with the quality of the professional development provided. For example, SAHE grantees that coordinate more extensively with districts provide professional development with a larger number of contact hours. Coordination also has a positive effect on the use of strategies for continuous improvement which, in turn, increases the active learning. In addition, coordination has an indirect effect upon targeting, through its effect upon continuous improvement. These results for coordination parallel those found for the district sample.

Variation Among SAHE Grantees in Management and Operations

We have discussed the legislative requirements for alignment, coordination, co-funding, continuous improvement, and targeting, and their role in shaping effective professional development in SAHE-grantee projects; we now discuss the extent to which SAHE-grantee projects are implementing these management strategies (Chapter 6).

Nearly all SAHE-grantee projects are aligned with state standards, and most are aligned with state assessments and district standards, but less than half are aligned with district assessments. SAHE grantees work closely with districts in several ways, such as communicating with district staff and using district needs assessments, but report low levels of other key components of coordination, such as co-funding and working with the Eisenhower coordinator. Also, SAHE-grantee projects tend to be much more affected by state than district indicators. However, SAHE grantees report moderately high levels of engagement in most other continuous improvement efforts, such as conducting needs assessments and evaluations. These findings suggest that, although the average quality of SAHE-grantee activities is relatively high, it could be further improved by strengthening the coordination between SAHE grantees and districts and giving more emphasis to the use of district indicators.

In addition, although most SAHE-grantee project directors report targeting teachers of low achieving, high-poverty students and teachers in Title I schools, these teachers are much less likely than others to participate in SAHE-grantee activities.

⁹ Relative to SEAs, SAHEs have a smaller number of grantees, and thus may be able to monitor their grantees' projects to help ensure the implementation of quality activities. However, we did not examine the SAHE's monitoring role.

Differences in SAHE-grantee Management and Operation by Institution Type and Departmental Affiliation

In our analysis of SAHE grantees, we compared activities housed in education, mathematics/science, and other departments, and research/doctoral and other types of institutions of higher education. Our results indicate that, on average, projects housed in education departments are stronger in important ways than are projects in mathematics/science departments. Education departments sponsor professional development activities that last more than twice the number of contact hours and span a longer time period. They engage in more types of coordination with the districts from which they draw their teachers, and they place more emphasis on continuous improvement than do mathematics/science departments. Education department projects are especially strong when housed in research/doctoral universities, where they are more likely to put a high focus on content and provide numerous opportunities for active learning.

These findings of the superiority of professional development provided through education departments, in contrast with mathematics/science departments, may be due to the fact that education departments have greater expertise in student and teacher learning of subject matter, as well as experience in coordinating with practitioners. Faculty in these departments are the main contributors to the literature on effective professional development in mathematics and science. Projects in mathematics/science departments, on the other hand, have a strong content focus. Others have noted that, in the training of teachers, quality might be enhanced by better collaboration between educators and scientists. Apparently, the same can be said for continuing teacher education in the form of Eisenhower professional development. Each type of department brings unique strengths to designing and delivering professional development that could be complementary in meaningful collaboration.

LESSONS FOR PROFESSIONAL DEVELOPMENT

These findings of the National Evaluation of the Eisenhower Professional Development Program have a number of lessons for professional development generally and for future Eisenhower legislation and program operations specifically.

First, the program should seek ways to encourage the use of all features of professional development that are related to teacher knowledge and skills, and change in practice. The program should continue emphasizing "sustained and intensive" professional development activities. More specifically, this evaluation suggests that professional development should focus on deepening teachers' *content knowledge* and knowledge of how students learn particular content, on providing opportunities for *active learning*, and on encouraging *coherence* in teachers' professional development experiences. Eisenhower professional development should pursue these goals using activities of greater *duration* and *collective participation*. Clearly, there is considerable room to increase the frequency of these attributes of effective professional development in both district and SAHE-grantee activities. While *reform* professional development is more effective than *traditional* professional development, the advantage of reform activities is explained primarily by greater duration.

Second, the program should develop additional approaches to targeting teachers in high-poverty schools. While increasing the participation of teachers in high-poverty schools is an important goal of the legislation, current approaches to targeting these teachers are insufficient to achieve this goal.

Third, federal indicators might be improved by specifying more clearly the dimensions of high-quality professional development, focusing on annual improvements rather than absolute levels, and setting higher standards. The federal indicators are not as directive as they might be in specifying the dimensions of high-quality professional development. Our analyses suggest that the federal indicators should guide local practice toward greater emphasis upon content knowledge, active learning, and coherence, and that districts should pursue these attributes of professional development through offering activities of greater duration and with more emphasis upon collective participation. In addition, several of the federal indicators are stated in terms of absolute levels to be achieved by a specified date (e.g., “at least 50 percent of teachers”). It would be better to have indicators stated in terms of the amount of improvement needed annually, until an acceptably high level of performance is reached. Finally, the federal indicators set some standards that are too low. For example, in targeting teachers from high-poverty schools, the standard is simply to exceed the national average. Furthermore, in the targeting indicator, participation in Eisenhower professional development is stated as a dichotomous variable (participate or not), while clearly teachers participate in Eisenhower-supported professional development in varying amounts and types.

Fourth, the program should pay attention to building district capacity to foster continuous improvement efforts. If using data to make decisions is to be a serious endeavor, then districts may need assistance in determining the types of data that would be useful and in interpreting them. We believe local evaluation can be done in ways much stronger than current practice, which relies heavily upon participation counts and teacher satisfaction surveys. We recommend that local evaluation of professional development focus on instruction, by assessing the degree to which the professional development is characterized by well-implemented attributes of high-quality professional development: a focus on content, active learning, and coherence, delivered with sufficient duration and collective participation. Such evaluations might be based on a variety of sources of data, including well-designed surveys of participating teachers, and the observation of teachers to assess the extent to which they have made appropriate changes in their instruction. Although the assessment of student achievement might be used as part of a balanced evaluation of professional development, we suggest that local evaluation efforts should not focus on assessing the effects of professional development on student achievement. There are simply too many intervening variables between professional development experiences and subsequent gains in student achievement to make such studies feasible at the local level. Further, collecting and analyzing high-quality data on gains in student achievement is expensive and requires technical skills that may not be present at the local level. Clearly, there needs to be more research that looks at the relationships between features of professional development and gains in student achievement, but this is better done as a part of well-designed major research studies.

Fifth, more information is needed on the characteristics and conditions that give some districts the capacity to provide high-quality professional development. We have speculated that districts could provide the same types of professional development as do SAHE grantees. There are existence proofs of districts doing exactly that. What we do not know from our analyses is the percentage of districts that have the capacity to provide such professional development. Our analyses

indicate that larger districts have greater capacity and, to some extent, so do high-poverty districts. This larger capacity may be explained, in part, by their larger district staff and, in part, by their greater Eisenhower funds. Consortia that tie together several small districts into one unit for providing Eisenhower professional development also seem, on average, more effective than small districts. The issue of district capacity is one that should be closely monitored in future research.

Sixth, districts could increase the quality of the professional development they provide by focusing their Eisenhower money on a small number of teachers, rather than spreading it across a large number of teachers. Not surprisingly, high-quality professional development costs more per participant than does lower quality professional development. Districts may feel a greater responsibility to reach a large number of teachers than do SAHE grantees, and this is reflected in the cost per participant. The question is, should districts continue to spread the money from the Eisenhower program across as many teachers as possible? Or, should they focus the money on a small number of teachers, so that they can provide higher quality, more influential professional development? Our results suggest the money should be focused. This recommendation also interacts with the finding about targeting. More effective targeting might, at the same time, provide a rationale for more focused expenditures.

Seventh, one reason that SAHE-grantee professional development is, on average, of higher quality than district professional development may be that SAHE grantees have to compete for funds. We do not know as much about these SAHE-sponsored competitions as we would like. We find that the majority of SAHE grantees have been receiving Eisenhower support for several years. Still, in all cases, IHE/NPOs interested in Eisenhower support must develop a proposal and have it judged worthy of funding. In contrast, districts receive money from the state educational agency on a formula basis, with no competition. Perhaps having districts compete for funds would push them toward higher quality professional development.

Eighth, there is considerable evidence that, on average, education departments in institutions of higher education provide higher quality professional development than do mathematics and science departments. The one exception is that mathematics/science departments in non-research/doctoral institutions focus more on content knowledge than do education departments. We do not have empirical data on inter-departmental collaboration, but, in our case studies, we did not see much evidence of these two types of departments collaborating and combining their expertise to provide high-quality professional development. Lack of collaboration between education and mathematics/science departments is a well-recognized problem in pre-service teacher education and may be an issue for in-service education, as well.

Ninth, SAHE-grantee projects should be engaging in higher levels of coordination with districts, as called for in the legislation. The evaluation shows that such coordination is related to the provision of high-quality professional development. Therefore, more attention might be paid to supporting and developing opportunities for SAHE grantees to coordinate and work with districts in mutually beneficial ways—ways that allow grantees to exercise their expertise in developing professional development projects while benefiting from district expertise in serving the needs of their teachers and students.

Finally, the evaluation supports the importance of programs that fund professional development activities within specified subject areas. Over the past 15 years, the Eisenhower Professional Development Program has provided continuous support for professional development activities for mathematics and science. This evaluation highlights the importance of the content focus of professional development activities and the role that the Eisenhower program has played in building capacity in these two subjects in school districts. Generic professional development that focuses on teaching techniques without a content focus does not appear to be effective. If the Congress is considering expanding the program, it should consider creating analogous programs in other academic subject areas, rather than eliminating the content focus on mathematics and science.