EVALUATION OF EDUCATOR PROFESSIONAL DEVELOPMENT PROGRAMS IMPLEMENTED AT THE REGIONAL AND LOCAL LEVELS

FINAL REPORT

PREPARED FOR THE TEXAS EDUCATION AGENCY

A REPORT TO THE 80TH LEGISLATURE

SOUTHWEST EDUCATIONAL
SEDL
DEVELOPMENT LABORATORY

RESEARCH AND EVALUATION

EXECUTIVE SUMMARY

In May 2006, the Texas Education Agency (TEA) contracted with the Southwest Educational Development Laboratory (SEDL) and its subcontractors Applied Research Solutions (ARS) and Academic Information Management (AIM) to evaluate educator professional development (PD) programs implemented at the local and regional level in Texas. The evaluation was designed to accomplish two primary tasks:

    1)   to review the implementation of educator PD programs in reading, math, and science at the regional and local level; and

    2)   to report on the characteristics and best practices of these programs.

For the purpose of the study, *regional PD* was defined as trainings provided by Educational Service Centers (ESCs) and *local PD* was defined as training provided by a school district and/or used by a district from other PD providers such as universities and commercial vendors.

Evaluation Questions

The evaluation study was guided by the following evaluation questions:

1) What PD programs are being implemented at the local level throughout the state?
2) What regional reading, mathematics, and science PD programs in Texas are identified as among the most promising?
3) What content and delivery practices are employed in the identified sample of promising regional PD programs?
4) What are the factors related to the accessibility of local and regional PD programs across the state?
5) What key characteristics and practices are present in promising regional PD programs in the state?

To address these areas of investigation, data for this study were collected using a variety of methodological approaches including interviews, surveys, and expert reviews.

Major Findings

Major findings of the study are described below organized by major areas of investigation.

Local PD

- PD provided at the local level is a major source of staff development for Texas teachers and district administrators rated this training high on quality indicators. Available local PD includes specific programs in all three major content areas (reading, mathematics, and science) as well as trainings focused on specialized topics and serving a diverse set of instructional purposes.
- Frequently used local trainings have content that focuses on: developing writing skills, specific reading, math, and science curriculums, whole school reform,

Texas state standards (TEKS) and TAKS, and reaching special groups within the student population (e.g., students in poverty and English language learners).

- Districts implementing local PD training use a large variety of providers and vendors (e.g., district providers, private consultants, national for profit companies, regional ESCs, and universities).

Regional PD

- There are also a large number of regional-level PD programs being delivered to teachers by the 20 ESCs around the state. The study identified over 40 programs meeting most or all of the criteria established for high-quality PD in the study that were delivered by ESC offices during the 2005-2006 school year. Six of these programs were selected for more detailed examination (including expert reviews of training content and delivery strategies and feedback from teachers who had participated in them) in this evaluation. The six promising programs identified for the study, representing the major content areas as well as a variety of grade-level foci, were:

  - Elementary Reading Institute (Developed by ESC Region 6)
  - Secondary Struggling Readers Institute (Developed by the Vaughn Reading Center, UT Austin)
  - Elementary Mathematics Institute (Developed by ESC Region 6
  - TEXTEAMs: Middle School Proportionality (Developed by the Charles A. Dana Center, UT Austin)
  - Bridging II TAKS: Light and Optics (Elementary Level) (Developed by ESC Region 4)
  - TEXTEAMs: Biology (Developed by the Charles A. Dana Center, UT Austin)

- The experts who reviewed the content of the six regional PD programs found that they were grounded in current research in each of the three major content areas (reading, mathematics, and science) and that they incorporated good, research-based instructional strategies. They also concluded that the trainings met many of the national standards for quality professional development defined by the National Staff Development Council (NSDC) and other discipline-specific organizations. All of the trainings were aligned with the Texas Essential Knowledge and Skills (TEKS) and incorporated strategies to improve student performance through direct applications to classroom practice.

- Training participants confirmed that these six programs were of high quality and that they equaled or surpassed other trainings they had attended in the same content area. The vast majority of teachers who provided feedback also expected that their participation in these PD offerings would result in improvements in both their teaching practice and their students' performance.

- The content area experts who contributed to this study identified a number of characteristics and promising practices in the six regional-level PD programs they

reviewed. In addition to several content-specific, research-based strategies found in the training materials, the expert reviewers identified the following eight promising practices in these PD programs:

- Grounding training materials in current research in the areas of PD design and implementation, area content, and teaching pedagogy
- Making direct and explicit connections between training activities and state standards
- Discussion of all instructional strategies and activities includes a rationale and an examination of context for use, with a constant relating of ideas back to classroom practice
- Using the strategy of going from "big ideas" to specific illustrative activities
- Focusing on more in-depth knowledge of a few concepts
- Using ongoing assessment to monitor progress and growth throughout the training to reinforce learning
- Inclusion of time for individual and group work to reflect and collaborate
- Designing materials that work for participating teachers at different levels

On a broader level, these features typify high-quality PD practice more generally, across content areas.

Teacher Access to PD

- The study also found that teachers throughout the state have adequate access to PD trainings to improve their classroom practice. The highest percentage of teachers reported having spent between 2 and 5 full days in PD trainings during the 2005-2006 school year and a very low percentage of teachers reported low attendance (0-9 hours).

- Teachers in lower performing schools were more likely to report higher levels of participation (over 40 hours) than those from the higher performing districts. This finding suggests that regardless of district performance, teachers across Texas have equal access to PD opportunities.

- The most consistently important factor influencing teachers' decisions about what PD to attend was the content of available trainings. This finding suggests that the use of PD is goal-driven and targeted toward fulfilling specific needs. Other important factors included the availability of stipends, and training time, scheduling, and location issues. Results also showed that teachers are involved in trainings with alternative formats including online and distance learning, although they prefer one-day workshops.

Overall, this study provides evidence that high-quality PD opportunities are currently being offered at the local and regional levels to educators in Texas, and that teachers in a variety of settings have access to these opportunities. Further research could focus more specifically on: local-level PD trainings, factors that would increase teacher participation rates in available PD, and outcomes of the trainings being offered.

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INTRODUCTION

In April 2006, the Texas Education Agency (TEA) issued a request for proposals (RFP) for a third-party contractor to evaluate educator professional development (PD) programs implemented at the local and regional level in Texas and to report the best practices of these programs. Programs targeted for the evaluation included Texas Reading, Mathematics, and Science Initiatives, in accordance with all requirements of Article III, Rider 43(f) of the General Appropriations Act. The two areas required for review by the selected contractor were:

- the implementation of educator PD programs in reading, mathematics, and science at the regional and local level; and
- the characteristics and best practices of these programs.

In May 2006, TEA selected the proposal submitted by the Southwest Educational Development Laboratory (SEDL) to accomplish this work. SEDL partnered with two small HUB-certified businesses in Texas, Academic Information Management Inc. (AIM) and Applied Research Solutions (ARS), to complete the evaluation study.

The current study benefited from the knowledge and resources SEDL gained in evaluating the Texas teacher training academies funded through the Texas Student Success Initiative (SSI) and implemented throughout Texas beginning in 1999. The study was conducted through a partnership with Gibson Consulting Group and three other firms, including SEDL and AIM (Gibson Consulting Group, 2004). For this previous study, SEDL reviewed the literature addressing "best practices" in professional development; conducted expert reviews of training materials and resources, including a review of the delivery and content of the Texas Reading Academy, the Online Texas Reading Academy, and the Texas Mathematics Academy; and surveyed teachers to ascertain their perceptions of the training and the extent to which they were implementing the strategies in the classroom. The goal of the present study was to extend the evaluation of practices implemented under the Texas SSI to more recent PD programs identified as promising by regional and local educators.

Background and Context

Requirements for student performance levels mandated in the No Child Left Behind Act of 2001 (NCLB) have resulted in the implementation of programs in all states to meet Adequate Yearly Progress goals. Increasing standards for student performance at "proficient" levels have motivated state and district level changes in several areas, including educator professional development. Prior to NCLB, the State of Texas created and implemented the Texas Student Success Initiative (SSI), which was intended to ensure that all students in the state received the instruction and support they needed to be academically successful in the areas of reading and mathematics. The SSI provided funding to support this goal, including increased support for high-quality educator PD.

The emphasis on providing teachers with high-quality PD training resulted in the development of the Teacher Reading Academies (TRAs), first delivered in 1999, and the Teacher Mathematics Academies (TMAs), first delivered in 2002, as part of SSI. In addition, Science Teacher Quality Grants, originally offered in 2004, supported improvement in science instruction. In June 2004, TEA commissioned Gibson Consulting Group, SEDL, Resources for Learning, and AIM to evaluate statewide teacher training activities funded through SSI, which included these three PD initiatives.

According to the findings of the SSI Academy study, the content of the TRAs was based on scientifically validated instructional practices and showed positive results in improving student performance (especially at lower-performing schools). The cost of their development and delivery also compared favorably with similar PD programs in other states. The TMAs were not as strong in terms of instructional content and teacher participation, but on-site observation and survey results were generally favorable. Results of the impact of the TMAs on student performance were inconclusive, but the cost per participant was found to be lower than that of the TRAs. The Science Teacher Quality Grant program was less developed but showed some promise toward becoming a good, research-based PD effort. The evaluation team provided a number of recommendations to improve the effectiveness and efficiency of the academies if further funding was provided to continue them. These included ensuring that teachers have access to high-quality PD opportunities designed to encourage broad participation in training activities, improving the quality and cost-effectiveness of the academies, and building an evaluation component into all teacher training programs (Gibson, 2004). The complete report on the SSI Reading and Mathematics Academy evaluation is available on TEA's Web site at http://www.tea.state.tx.us/opge/progeval/index.html.

For the current study, SEDL's evaluation approach is grounded in an understanding that the classroom is the critical unit of change in improving student achievement (Gibson, 2004; SEDL, 2004; see also Elmore, 1996; Fullan, 1995), and that professional development is an important factor in producing meaningful change in classroom instruction (Elmore, 2002; Guskey, 2003). In fact, there is broad expert consensus regarding the characteristics of effective professional development, though the strength of the supporting research evidence is uneven (Elmore, 2002; Guskey, 2003). These characteristics include content and approaches that are grounded in research and aligned with standards and curricula, a focus on in-depth subject matter understanding, provision of in-depth support, approaches that encourage collaboration and leadership, and ongoing evaluation of effectiveness (SEDL, 2004; Gibson Consulting Group, 2004). The standards for effective professional development identified by the National Staff Development Council (NSDC, 2001) incorporate these and other key characteristics.

Previous research on the SSI Teacher Academies indicated that the academies' training materials reflected most, though not all of the NSDC standards (Gibson, 2004). Although state funding for the academies ended, SEDL expects that elements of the academies' training approaches and materials are still in use at regional and/or local levels. This study was designed to help to identify instances of such use, as well as other approaches

to teacher professional development in the core content areas of reading, mathematics, and science.

EVALUATION APPROACH AND METHODS

The goal of SEDL's evaluation was to identify key characteristics and practices of high-quality PD programs that have been made available to teachers since the completion of the evaluation of the Texas SSI. To do this, SEDL sought to understand the array of PD programs being implemented locally and regionally across the state and identify a sample of the most promising regional programs to examine more closely. For the purpose of the study, *regional PD* was defined as trainings provided by Educational Service Centers (ESCs) and *local PD* was defined as training provided by a school district and/or used by a district from other PD providers such as universities and commercial vendors. The following are key components of the evaluation:

- Identification of high-quality PD programs being implemented at the *local level* through a survey of district administrators.
- Identification of high-quality PD programs being implemented at the *regional level* through ESC interviews and district administrator ratings.
- Expert review of six regional PD programs (one for elementary teachers and one for middle/high school teachers in each area of reading, mathematics, and science) that led to the creation of profiles of a sample of promising programs in the state.
- Surveys of teachers who participated in the selected regional PD programs to identify what they consider to be key characteristics and practices and examine factors related to accessibility, quality, knowledge gained, and outcomes on teaching practices and student performance.
- Surveys of teachers from a variety of school district settings (i.e., small, large, high performing, low performing) to examine factors related to the accessibility of PD programs across the state.
- A cross-profile analysis to examine key characteristics and practices across promising regional PD programs.

Evaluation Questions

The evaluation study was guided by the following evaluation questions:

- What PD programs are being implemented at the local level throughout the state?
- What regional reading, mathematics, and science PD programs in Texas are identified as among the most promising?
- What content and delivery practices are employed in the identified sample of promising regional PD programs?
- What are the factors related to the accessibility of PD programs across the state?
- What key characteristics and practices are present in promising regional PD programs in the state?

Table 1 sets out the evaluation questions and associated methods and data sources used to address each question.

Table 1. Evaluation Questions, Methods, and Data Sources

Question	Methods	Data Sources
1. What PD programs are being implemented at the local level throughout the state?	• Survey to identify locally implemented programs	• District administrators
2. What regional reading, mathematics, and science PD programs in Texas are identified as among the most promising?	• ESC interviews to identify regionally implemented programs • Survey of district administrators ratings of PD programs • PD participant ratings of PD programs	• ESC staff • District administrators • Post-session survey results of teachers who participated in the programs
3. What content and delivery practices are employed in the identified sample of promising regional programs?	• Expert review of a sample of promising PD programs • Survey of teachers on quality, knowledge gained, and outcomes of selected programs	• Research on effective PD programs • National and state standards • Expert reviewer reports • Teachers who participated in selected programs
4. What are the factors related to the accessibility of PD programs across the state?	• Survey of teachers throughout the state	• Representative sample of teachers in small/large and low-/high- performing schools
5. What key characteristics and practices are present in promising regional PD programs in the state?	• Expert review of promising PD programs	• Expert reviewer panel discussion and reports

Restricting the Sample of Promising PD Programs

In order to identify a set of promising practices in regional PD programs being implemented in Texas, the evaluation team employed a variety of strategies to reduce the pool of all possible programs in the state down to a manageable set given the timeframe of the study. To begin with, the evaluation team (in consultation with TEA) decided to limit the sample of possible PD programs to those delivered by 10 of the 20 Texas ESC offices. The 10 ESCs chosen for participation were selected to include school districts that would be representative of districts throughout the state (i.e., urban, rural, or suburban; small and large districts) as well offer the widest array of PD programs within the region. All interviews and surveys conducted for the study were restricted to sample populations within the 10 ESCs.

The sample of possible promising regional PD was further reduced by applying a basic set of objective criteria derived from the evaluation of the SSI Teacher Academies. This ensured that all possible programs that might be subjected to expert review contained, at the very least, some fundamental elements of a high-quality program. These criteria were:
   • The program was viewed as positively influencing teaching practice and student achievement in the district
   • The program involved at least 2 to 3 days of training
   • The program consisted of grade-level specific training (i.e., elementary, middle, and secondary)
   • The program was content-focused in reading, mathematics, or science

These criteria reflect the characteristics of effective PD identified in many standards for PD programs (e.g., NSDC standards) as well as SEDL's literature review of research on high-quality PD prepared for TEA for the evaluation of SSI teacher academies (Gibson, 2004). The literature suggests that improved teacher and student learning outcomes can be achieved through PD programs that encompass key elements including activities that 1) improve or increase teachers' knowledge of academic subjects; 2) are sustained, intensive, and classroom-focused and are not one-day or short-term workshops; and 3) are curriculum centered, grade-specific, and standards-based. The restriction of programs to these criteria allowed the evaluation team to both: 1) focus on identifying promising practices related to PD programs that would most likely lead to improved teachers and student learning outcomes; and 2) reuse instruments and analysis approaches developed for the purpose of evaluating the SSI Teacher Training Academies (e.g., survey items, expert review guidelines).

Finally, although the study was designed to address both *local* and *regional* PD programs, the evaluation team intentionally restricted the sample of promising programs that would be submitted to expert review to *regional* programs that met the above criteria and that were implemented by the 10 identified ESCs. The ESC staff who participated in interviews to identify regional PD programs provided during the 2005–2006 school year generated a list of specific programs that could be rated by the district administrators who utilized them. Because the study data collection primarily occurred over the summer months, this source of information was not available from *local* school districts.

Evaluation Methods and Data Sources

The evaluation team used a combination of qualitative, quantitative, and expert review methodologies to address the evaluation questions for this study. These included collecting data from interviews, surveys, and content reviews in the fields of reading, mathematics, and science. All survey instruments used in the study were reviewed by TEA staff and approved by TEA's Data and Information Review Committee (DIRC) (see Appendix A for copies of the survey instruments). For each of the surveys conducted, respondents had a choice of returning paper surveys in pre-paid envelopes or completing the survey online. Respondents who chose the online survey option used an identification number provided in the cover letter to access the survey. Each of the data sources and the methods used to conduct the study are described in detail below, beginning with the process used to identify the high-quality local PD programs.

Identification Process for High-Quality PD Programs Implemented at the Local Level

The process for identifying high-quality PD programs being implemented at the local level relied on data collected from a survey of district administrators.

District Administrator Survey

The District Administrator Survey was designed to gather the names and providers of locally implemented PD as well as a variety of other data for the study (described below). The survey was mailed to district superintendents on June 30, 2006. In the cover letter, district superintendents were asked to distribute the survey to other district personnel

(e.g., director of staff development, director of personnel, or director of curriculum and instruction) if they could more appropriately respond to the survey. As shown in Table 2 below, a total of 271 district administrators completed the survey for a 51% response rate.

Table 2. District Administrator Survey Sample and Response Rate

Total Number of Superintendents in Sample	Number of Superintendents Responding	Response Rate
531	271	51%

Source: Analysis of District Administrator Surveys

The surveys were primarily completed by the district superintendents (44%) or directors of curriculum and instruction (28%). Table 3 provides information on other categories of district personnel who completed the survey.

Table 3. Position of District Administrator Survey Respondents

Position in District	Number	% of Respondents
Superintendent	118	44
Director, Staff Development	24	9
Director, Personnel	3	1
Director, Curriculum and Instruction	76	28
Other	50	18
Total	271	100

Source: Analysis of District Administrator Surveys

These surveys asked administrators to identify specific high-quality, locally-implemented PD programs used in their districts during the 2005–2006 school year (including Summer 2005) that met the general criteria for high-quality programs discussed above.

A table was provided for respondents to fill in that included spaces for the name of the local PD, the vendor providing it, whether it was at least a 2-day training, the school level it focused on (i.e., elementary, middle, or high school), and its primary content focus (i.e., reading, mathematics, or science). The open responses indicating the names and vendors were qualitatively coded and categorized into themes and described by frequency and type of PD program. A list of all local PD programs identified was created (Appendix B) and programs mentioned by multiple districts were tabulated for the report.

Selection Process for High-Quality Regional PD Programs

The process of selecting high-quality regional PD programs for inclusion in this study involved three steps: conducting initial interviews with ESC staff, obtaining survey data from district administrators, and reviewing the results of ESC evaluations of training sessions.

ESC Interviews. The first step in selecting high-quality regional PD programs to be included in the evaluation was to obtain information about what specific trainings were being offered by ESC regional offices across the state during the 2005–2006 school year.

As mentioned earlier, the evaluation team (in consultation with TEA) decided to limit the sample to PD programs delivered by 10 of the 20 ESCs. An evaluation staff member conducted interviews with the staff development coordinator at each of the 10 ESCs to obtain a list of 2005–2006 PD offerings that met the established criteria for high-quality PD. In some cases, the individual interviewed referred the evaluator to the region's general PD catalog for additional program listings.

Each ESC identified between 1 and 12 programs, and the interviews and catalog searches combined resulted in a list of over 40 PD programs across the state that met all or most of the criteria. To avoid undue burden on survey respondents and to make sure that all content areas and grade levels were represented, this list was reduced to 33 regional programs. These 33 programs were used to create tailored survey forms specific to each district, and then sent to district administrators.

District Administrator Survey. The district administrator survey described earlier contained a section devoted to rating the quality of the regional trainings identified through the ESC interviews. A set of 10 survey forms was designed, tailored to list relevant regional trainings for districts in each of the 10 ESCs was designed. Administrators were asked to indicate whether teachers in their district attended each of the trainings listed in their region and to provide ratings for each program. The two survey questions that were used to rank the regional PD programs asked administrators to comment on the quality and expected impact of the specific regional PD listed on their survey forms. The specific questions asked and response scales for these two items were the following:

- How would you rate the overall quality of the [specific training name] training? (Response scale: 1 = Very Poor, 2 = Poor, 3 = Good, 4 = Very Good)

- How likely do you think it is that your teachers' participation in the [specific training name] training will positively influence their students' academic performance? (Response scale: 1 = Not at all likely, 2 = Unlikely, 3 = Likely, 4 = Very Likely)

Responses to these two survey items were analyzed and a composite rating was calculated based on the average district ratings on both the quality and impact items. Using these means and an examination of the distribution of ratings across all 10 ESC regions, a total of twelve of the highest rated programs with the smallest variance of ratings were identified, two in each of the six areas (reading, mathematics, and science for elementary and middle/high grades).

ESC Session Evaluations. To further reduce the 12 selected programs to the final six programs for expert reviews, each ESC that had identified one of the 12 programs was asked to supply the results of the most recent teacher evaluations of the programs. The evaluation forms used by the ESCs each employed different questions and rating scales, so the results of the participant evaluations across PD programs were not directly comparable. However, evaluation data were received for seven of the 12 programs and

showed very positive teacher ratings for each of the PD programs, providing confirmation for the consideration of their inclusion in the evaluation.

The final six PD programs were selected based on the availability of positive teacher ratings and sufficient training materials (e.g., written materials, trainer notes, handouts, presentation slides, CDs, etc.) for the expert reviews and representation for each of the content areas and grade levels. The final list of six PD programs included one elementary and one secondary regional PD training in each of the three content areas of reading, mathematics, and science.

Review of Identified Promising Programs

In order to closely examine the six identified PD programs, the evaluation team contracted a panel of recognized experts to review the programs, and conducted surveys of teachers who participated in the trainings.

Expert Reviews. Three content-area experts conducted reviews of the training materials, comparing them to best practices and national and state standards in the areas of reading, mathematics, and science. The criteria for identifying the experts included 1) demonstrated experience in researching best practices in teacher education, 2) recognition in the field of teacher education, 3) record of publications related to best practices in teacher PD, and 4) extensive knowledge of research in the field of teacher PD.

The following individuals served as the expert reviewers for this study:

- Ms. Susan M. Ebbers, education consultant and doctoral student at the University of California, Berkeley (reviewer for reading PD)

- Dr. Maggie Myers, education consultant and lecturer in the Department of Computer Sciences at the University of Texas at Austin (reviewer for mathematics PD)

- Dr. Suzanne Stiegelbauer, education consultant and associate professor in educational leadership at Texas State University (reviewer for science PD)

Each reviewer was provided with copies of training materials for two PD programs (one elementary and one secondary level) in their content specialty area. Training materials for different programs varied but included items such as binders of trainer materials, PowerPoint presentation slides, copies of handouts and other resources, and videotapes. The evaluation team also provided each reviewer with criteria and guidelines for conducting the reviews and submitting the final reports (copies of the review guidelines and review criteria used for this study can be found in Appendix C).

Reviewers were asked to compare the content and delivery of the PD programs with best practices, to provide the criteria for their assessments, and to list references at the end of their reports. Specific questions were provided in the review criteria to structure the reports (See box below).

- **How does the PD program compare to "best practices" in teacher professional development?**

- **Is the PD program grounded in research and clinical knowledge of teaching and learning in the field of [reading, math, or science]?**

- **Is the PD program grounded in national and state [reading, math, or science] content and teaching standards?**

- **Does the PD program offer opportunities for teachers to become deeply immersed in [reading, math, or science] content and pedagogical content knowledge?**

- **Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in [reading, math, or science]?**

- **Does the PD program meet your standards for high-quality professional development?**

Reviewers provided detailed descriptions of the training content and completed tables summarizing overall strengths and weaknesses of each program as well as the degree to which it addressed the Standards for Staff Development established by the National Staff Development Council (NSDC) (2001). The experts were given approximately 3 weeks to assess the materials and submit their reports. The evaluation team summarized each review for inclusion in this report and sent the summaries to the experts to check for clarity and accuracy (the complete reports originally submitted by each reviewer can be found in Appendix D).

Teacher Participant Survey. The purpose of the Teacher Participant Survey was to collect additional data on the six selected regional PD programs from teachers who had participated in them during the 2005–2006 school year. Survey questions were designed to collect information on teachers' demographic characteristics (e.g., years of teaching experience, highest education level attained, ethnicity, and approximate number of hours spent in staff development during the 2005–2006 school year), as well as their perceptions on various aspects of the PD trainings. Following the first section on demographic and training information, survey questions focused on the following: comparisons of the designated training with other PD programs they had attended in the same content area, whether they had received a stipend for attending the training, whether they had learned any new teaching strategies or content information from the training, factors that had affected their decision to attend, and their opinions about the overall quality and expected outcomes of the training. A final open-ended question provided an opportunity for respondents to offer additional comments.

Lists of participants with contact information were requested by the evaluation team from the ESCs offering each of the trainings during this time period. As shown in Table 4, the total number of teachers who participated in the 6 PD programs was 508. A total of 72 surveys were returned for a response rate of 14%.

Table 4. Teacher Participant Survey Sample and Response Rates

Total Number of Teachers in Sample	Number of Teachers Responding	Response Rate
508	72	14%

Source: Analysis of Teacher Participant Surveys

Survey data were entered into a standard database and analyzed and summarized using statistical software.

Process to Examine Factors Related to the Accessibility of High-quality PD Programs Across the State

Teacher Access Survey. The purpose of the Teacher Access Survey was to collect data on teachers' perceptions about several aspects of their access to (and preferences about) local and regional PD. The sampling strategy used for this survey allowed for a comparison of access information received from teachers in low- and high-performing and small and large districts across the state.

The survey instrument contained a total of 12 questions divided into two sections. The first section requested teacher demographic information (years of teaching experience, highest education level attained, ethnicity, and approximate number of hours spent in staff development during the 2005–2006 school year). The remainder of the survey questions focused on various aspects of teacher access to PD. Questions included what types of PD they had attended in the past year, what factors influenced their decision to attend particular trainings, their experience with online trainings, their preferences about scheduling and formats of PD trainings, and a final open-ended question about improving access to high-quality PD. Questions about the types of training attended and factors that influenced their decision to attend PD were designed to collect data about both local and regional PD.

Sampling strategy. The sampling strategy used for the Teacher Access Survey was to include a sample of teachers from both high- and low-performing districts for comparative analysis. The operational definitions of "high" and "low" performance were based on student performance on the 2005 Texas Assessment of Knowledge and Skills (TAKS) reading/ ELA examinations (reading and mathematics are highly correlated) using the district percent passing combined over all grade levels tested (grades 3–11). Although a sample size of 1,000 is adequate for a study of this type, it was decided to oversample to include teachers from a wide range of district types (i.e., demographic characteristics) and to ensure that approximately half of the sample would be from high-performing districts and half from low-performing districts. District performance was selected given that decisions regarding the source of PD are often made at the district level. For example, smaller districts are unlikely to have a dedicated PD staff leading to use of an ESC for training while a large district will often have a dedicated staff for professional development.

The following steps were used to select the final sample of teachers for the survey:

- The population of districts was restricted to the 10 ESCs used to construct the PD set from which programs were selected for detailed examination. This restriction was used to more closely link the teachers to potential PD programs and, more importantly, to consider only teachers from districts in the 10 ESCs that had also received a District Administrator Survey. A post hoc review of teacher characteristics did indicate some differences to the statewide population, but these differences were generally small.

- A total of 558 districts were located with the 10 selected ESCs. These districts were sorted according to TAKS 2005 reading performance with those from the upper one-third and lower one-third performance levels selected for further consideration.

- A purposive selection was then made to ensure that certain districts were not overrepresented (e.g., charter schools tend show up more frequently within the lower distribution of performing districts) or underrepresented (e.g., there are far more small districts than large districts in the state). The final list of districts included representatives from each of the 10 ESCs with varied demographic characteristics (e.g., size, ethnicity).

- Within this list of districts, campuses were selected to receive surveys based on a structured selection by campus grade-level type. This step was necessary to ensure that there was a reasonable number of campuses within a district (too many campuses would result in an undue burden on the districts) and to account for the difference in the number of schools within grade-level categories (there are far more elementary schools than high schools). The number of campuses selected within a district ranged from 1 campus to 16 campuses.

- Once campuses were selected (N = 313), a random sample of teachers (from a list of all teachers provided by TEA) was drawn that was proportional to the number of teachers on the campus. Once duplications and other questionable data were excluded, a final set of 3,669 teachers (well above the number needed for sampling purposes) was designated to receive surveys.

Administration and analysis approach. Surveys were mailed out to teachers beginning September 22, 2006, using mailing labels containing the last known campus and district address for individual participants. A cover letter on TEA letterhead accompanied the survey form, and recipients were asked to complete the survey and return it in the enclosed pre-paid return envelope by October 11, 2006. The total numbers of surveys distributed and returned are shown in Table 5.

Table 5. Teacher Access Survey Sample and Response Rate

Total Number of Teachers in Sample	Number of Teachers Responding	Response Rate
3612	998	28%

Source: Analysis of Teacher Access Surveys

Of the final sample of 3,612 surveys distributed to teachers in selected districts, a total of 998 were returned with an overall response rate of 28%. In the original sample, 145 districts with less than 6,000 students and 13 districts with more than 6000 students were represented. Included in the returned surveys were teachers from 693 small districts (less than 6,000 students) and 305 from larger districts.

As discussed earlier, districts were also partitioned into relatively low- and high-performing categories based on the TAKS (upper and lower one-third performance levels). Three hundred and seventy one teachers who returned surveys were from the lower performing districts, and 608 were from the higher performing districts. There were sufficient numbers of teachers in both the categories of TAKS performance (high and low) and district size (small and large) to yield sufficiently stable data. The demographics of the sample, while not a perfect match to statewide data, were within reasonable bounds for the purpose of the study.

Data received from the online and paper Teacher Access Surveys were combined to form a common database for the access analyses. All data were analyzed using AIM proprietary compilation routines supplemented with select analysis within *Statistica* (StatSoft Corporation) software. Given the nature of self-report data and the relatively small number of responses, no statistical tests of significance were performed.

Process for Identifying Key Characteristics and Practices Present in High-Quality PD Programs

The process of identifying key characteristics and practices of high-quality PD programs being implemented in the state relied on data collected during a panel discussion held between the expert reviewers after the completion of their independent reviews of the PD programs.

Panel Discussion. In addition to submitting written reviews, the experts participated in a panel discussion with evaluation staff in October (two of the reviewers met in person at SEDL with evaluation staff and the third participated in the discussion via conference call). The purpose of this discussion was to identify research-based strategies in content area PD and promising practices used across all six of the PD programs. During this discussion, the experts were able to reach consensus on what they judged to represent successful strategies and practices for high-quality PD programs.

The following section presents the evaluation findings organized by evaluation question. The findings section is followed by a summary of the findings and recommendations for future related evaluations.

EVALUATION FINDINGS

In the section, the evaluation findings across the multiple data sources and methods are presented organized by the evaluation questions.

1. What PD programs are being implemented at the local level throughout the state?

In order to obtain information about *local* PD programs being utilized across the state, district administrators were asked to identify specific high-quality, locally implemented PD programs used in their districts during the 2005–2006 school year (including summer 2005) that met all of the following criteria:

- The program was viewed as positively influencing teaching practice and student achievement
- The program involved at least 2 to 3 days of training
- The program consisted of grade-level specific training (i.e., elementary, middle, and secondary)
- The program was content-focused in reading, mathematics, or science

A total list of 488 local PD programs was created based on responses to this survey question (the complete list of local PD can be found in Appendix D). As shown in Table 6, information on grade-level and content-area focus was provided for 457 of the local trainings. (The total number of responses (Ns) mentioned in the following discussion vary due to incomplete information provided for some of the individual listings)..

Table 6. Local PD: Number of Local PD Programs Identified

Grade Level	Content-Area Focus				
	Reading	Math	Science	0 or 2+ specified	Total
Elementary	61	21	20	19	121
Middle School	4	14	1	3	22
High School	5	6	4	9	24
None or multiple content areas specified	59	45	15	171	290
Total	129	86	40	202	457

Source: Analysis of District Administrator Surveys

In 202 (44%) of the listings, either no content-area focus or more than one content-area focus was specified for the training. Similarly, in 290 (63%) of the listings, either no grade level or more than one grade level was specified. The majority of reading PD were either at the elementary level (47%) or non-specific to a grade level (46%). In mathematics, about one fourth (24%) of the trainings were at the elementary level and a little over one half (52%) were non–grade-level specific. One half of the science PD were at the elementary level, and 38% were not targeted at a particular grade level.

Of the total PD identified as targeted at the elementary level, 50% were focused on reading and 17% each on mathematics and science. At the middle school level, the majority (64%) were in the area of mathematics, with 18% in reading and only 5% in

science. PD designed specifically for high school students were spread across the content areas a little more evenly (21% reading, 25% mathematics, and 17% science).

Of the 488 total programs listed, a training title was provided for 469. In many cases, there was not enough information provided to identify a particular PD program. Following is a list of specific trainings that were identified by at least four respondents (Ns shown below represent the number of respondents who listed each PD).

- *Six Trait Writing (N = 11).* Six Trait Writing was originally developed at the Northwest Regional Educational Laboratory and addresses various needs in writing instruction.

- *Sharon Wells Mathematics Curriculum Training (N = 10).* Sharon Wells trainings provide a mathematics curriculum designed specifically for Texas educators that is aligned to the Texas Essential Knowledge and Skills (TEKS) and addresses the TAKS.

- *Voyager (Mathematics or Reading) (N = 6).* Voyager Expanded Learning is the leading intervention provider for the Texas Intensive Reading and Mathematics Initiative.

- *Accelerated Schools (Mathematics, Reading, or Vocabulary) (N = 5).* Accelerated Schools PD programs are part of a whole-school reform effort to challenge traditionally low-achieving students with accelerated curriculum.

- *Margaret Kilgo (Kilgo Consulting Inc.) (N = 5).* Margaret Kilgo's workshops are specifically designed for Texas teachers and focus on the relationship between the state curriculum, TEKS and student expectations, and TAKS.

- *TEXTEAMS (N = 5).* TEXTEAMS are PD programs in the areas of mathematics and science specifically focused on TEKS and TAKS, developed by the Charles A. Dana Center at the University of Texas at Austin.

- *Ruby Payne (aha! Process Inc.) (N = 4).* Workshops by Ruby Payne focus on poverty and education issues.

- *Sheltered Instruction Observation Protocol (SIOP Institute) (N = 4).* SIOP training is specifically designed to assist English language learners.

There was a considerable variety of trainings listed in a number of different categories or themes of training types. For instance, among those mentioned were trainings focusing on the following:

- Implementing specific instruction or curriculum (e.g., AP trainings from the College Board and others, FOSS science curriculum, TEXTEAMS, Voyager, Destination Mathematics from Riverdeep, Sharon Wells Mathematics Curriculum

trainings, Six Trait Writing, training on the Spalding Reading Method, Waterford Early Reading, Mathematics, and Science trainings, A+ Learning software, and Carnegie Learning mathematics curriculum training)

- Whole school reform strategies (e.g., Accelerated Schools, Effective Schools Project from Tarleton State University, High Schools That Work from the Southern Regional Education Board, PLC trainings from Solution Tree, Success for All, and trainings on curriculum alignment)

- Specific instructional techniques (e.g., Capturing Kids' Hearts from the Flippen Group and district-level trainings on differentiated instruction, classroom management, behavior strategies, and collaborative and cooperative learning)

- Assessment strategies (e.g., DIBELS training from the University of Oregon Center on Teaching and Learning, a training on benchmark testing from the Southwest Educational Development Laboratory, and Margaret Kilgo workshops)

- Approaches to learning (e.g., Brain Friendly Instruction, Thinking Maps software and training from Thinking Maps Inc., and a workshop on cognitive coaching)

- Special student populations (e.g., Gifted and Talented Student Institutes, Ruby Payne workshops on students in poverty, training on the Sheltered Instruction Observation Protocol, and district workshops on teaching bilingual and ESL students)

Among the total programs listed, 444 included some descriptor in the category of "vendor." Of these, 434 provided enough information to identify a type of vendor or delivery source (as noted above, developers, marketing sources, and specific trainers were not necessarily differentiated). In general, the "vendors" listed for the local PD programs fell into one of the following categories:

- Individual's name with no organizational affiliation provided (probably the person who delivered the training or, in some cases, perhaps the developer) (N = 102, 24%)

- District or local provider (N = 77, 18%)

- Private consultant (individuals, groups, or consulting companies) (N = 65, 15%)

- National (for-profit) company (e.g., developers, publishers) (N = 64, 15%)

- Regional ESC (N = 40, 9%)

- University (14 of these were the Charles A. Dana Center at the University of Texas) (N = 34, 8%)

- Nonprofit organization (N = 31, 7%)

- Local or regional educational cooperative or shared services agreement (N = 7, 2%)

- Miscellaneous (e.g., instructors from Montessori or charter schools and member organizations such as Texas Elementary Principals and Supervisors Association) (N = 14, 3%)

There was a great deal of diversity within these general categories, indicating that school districts across the state obtain the local PD resources offered to their teachers from a wide variety of sources. Although the survey question asked respondents to limit the PD programs they listed to include only those that they thought were of high quality (i.e., positively influencing teaching practice and student performance), this evaluation was not designed to assess the quality of these local PD trainings. It is, however, a primary objective of this study to report on data collected about the quality of select regional-level PD, which are discussed in the following section.

Several caveats about this data should be noted. First, in spite of efforts to limit the listed PD programs to include only local trainings, other types of PD programs were included (e.g., regional PD offered by ESCs). The same was true for efforts to limit listed local PD to those that were both content-area and grade-level focused. Finally, there was considerable inconsistency in how the listed training names and vendors were reported. For example, in some cases, respondents listed a general topic area (e.g. "mathematics" or "science"), a funding source (e.g., a Reading First grant), or the name of the person or entity that delivered the training as the training name. Similarly, responses in the "vendor" category appeared to include a number of different types of information (e.g., the actual developer of the training, the name of the trainer who delivered it, the company contracted to deliver it, or the source from which it was purchased). These data limitations should be kept in mind when considering the summary statements about the list of local PD provided in this open-ended survey question.

2. What regional reading, mathematics, and science PD programs in Texas are identified as among the most promising?

As described earlier, the evaluation approach employed a variety of strategies to reduce the pool of all possible regional programs in the state down to a manageable set to more closely examine. The PD selection process involved two primary steps: 1) conducting initial interviews with ESC staff to identify regional PD that met the criteria for the study and 2) obtaining survey data from district administrators who rated the quality of the PD in their region. In addition, the evaluation team reviewed the results of ESC teacher evaluations of recent training sessions. This section presents the results obtained during each of the two primary steps in the program selection process.

ESC Interviews. A member of the evaluation team interviewed ESC staff development coordinators to obtain a list of PD offerings that met the established criteria for high-quality PD programs and that were offered by the ESCs during the 2005–2006 school year (including summer 2005). Each ESC identified between one and twelve programs in reading, mathematics, and science that met all or most of the criteria. The ESC interviews (and, in some cases, ESC training catalog searches) resulted in a list of over 40 potential PD programs across the state. This list was further narrowed to include the 33 programs shown in Table 7.

The 33 programs were used in designing tailored surveys to be sent to district administrators in each of the 10 ESC regions (i.e., survey recipients were asked to comment only on specific PD programs that had been offered through their region's ESC).

Table 7. Identified Regional PD Programs

ESC	Name of PD Programs Offered
1	Effective Instruction for Struggling Readers (Grades K-5)
	1st – 4th Grade Teacher Reading Academies
	Bridging II TAKS: Light and Optics (Grades 5-8)
6	Elementary Reading Institute
	Elementary Mathematics Institute
	Literature Circles for TAKS Reading Success
8	Summer Mathematics Institutes (K-2)
	TAKS Reading Accelerated Curriculum (Grade 6)
9	Strategies for Intermediate At-Risk Readers
	Small Scale Chemistry−Experiments
	Bridging II TAKS: Light and Optics (Elementary)
	TEXTEAMs: High School Geometry
11	5-7th Grade Mathematics Academies
	TEXTEAMs: Proportional Reasoning (Grades 6-8)
	TEXTEAMs: Rethinking Elem. Mathematics (Grades 1-5)
	TEXTEAMs: Biology
13	TEXTEAMs: Algebra I 2000 & Beyond
	TEXTEAMs: Middle School Proportionality
	6 Traits Writing Instruction & Assessment (Grades 3-5)
	Secondary Struggling Readers Institute
15	Making Manipulatives Come Alive!
	Teaching Mathematics in the Middle Grades
	K-2 Literacy Centers Institute
	Reading Instruction in Middle School
16	5th Sense Mathematics - Accelerated Instruction (Grade 5)
	1st – 4th Grade Teacher Reading Academies
19	MSP Middle School Mathematics Institute
	MSP Middle School Science Institute
	Johnny Can Spell
20	Fifth Grade Teacher Reading Institute
	Middle School Literacy Initiative
	Middle School Science Lesson Development
	Mathematics Matters: Whole Number Operations (Grades 3 & 4)

Source: ESC Interviews

District Administrator Ratings. In order to narrow the list further, the evaluation team asked district administrators to indicate whether teachers in their district had attended the specific trainings listed on their survey form. Respondents were then asked to provide separate quality and expected impact ratings for each individual training that their teachers had attended during the 2005–2006 school year. Responses to the ratings questions for the 12 highest-rated PD programs are shown in Table 8. The refined rating presented in Table 8 was created to reduce the impact of unequal sample sizes and the variability of responses across regions. (This refined rating is a statistical adjustment based on the average rating given on quality and impact and the variability of ratings across all respondents.)

Table 8. Impact and Quality Ratings for the 12 Highest-Rated PD

Reading PD	Level	Impact			Quality			Aver. SD	Aver. Mean	Refined Rating
		N	Mean	SD	N	Mean	SD			
Elementary Reading Institute	Elem.	15	3.67	0.49	16	3.56	0.51	0.500	3.62	**5.11**
Secondary Struggling Readers Institute	Sec.	11	3.45	0.52	10	3.60	0.52	0.519	3.53	**4.89**
Literature Circles for TAKS Reading Success	Sec.	9	3.55	0.53	9	3.55	0.53	0.527	3.55	**4.89**
K–2 Literacy Centers Institute	Elem.	8	3.50	0.54	6	3.50	0.55	0.542	3.50	**4.78**
Mathematics PD	Level	Impact			Quality			Aver. SD	Aver. Mean	Refined Rating
		N	Mean	SD	N	Mean	SD			
Elementary Mathematics Institute	Elem.	16	3.69	0.48	15	3.67	0.47	0.484	3.68	**5.29**
Summer Mathematics Institutes K–2	Elem.	13	3.46	0.52	11	3.79	0.47	0.493	3.60	**5.12**
Teaching Mathematics in the Middle Grades	Sec.	9	3.11	0.33	5	3.20	0.45	0.391	3.16	**5.05**
TEXTEAMs: Middle School Proportionality	Sec.	7	3.43	0.54	7	3.57	0.54	0.535	3.50	**4.79**
Science PD	Level	Impact			Quality			Aver. SD	Aver. Mean	Refined Rating
		N	Mean	SD	N	Mean	SD			
Bridging II TAKS: Light and Optics	Elem.	9	3.22	0.44	6	3.17	0.41	0.425	3.20	**4.90**
Small Scale Chemistry Experiments	Sec.	7	3.29	0.49	3	3.67	0.58	0.533	3.48	**4.77**
TEXTEAMs: Biology Institute	Sec.	5	3.20	0.84	5	3.40	0.55	0.693	3.30	**3.97**
Middle School Science Lesson Development	Elem.	10	3.20	0.92	9	3.33	0.50	0.710	3.27	**3.88**

Source: Analysis of District Administrator Surveys

To select the final six programs to be profiled in the study, each ESC that offered one of these 12 programs was asked to supply the results of the most recent teacher evaluations of the programs. Once the evaluation forms were submitted and reviewed, the evaluation team met to select the final set of programs for presentation and approval by TEA. The final six PD programs were selected based a variety of factors, including: the availability of positive teacher ratings, the availability of sufficient training materials (e.g., written materials, trainer notes, handouts, presentation slides, CDs, etc.) for the expert reviews, and representation in each of the content area and grade level categories.

The six regional PD programs that were ultimately selected for further examination in the evaluation were the following:

Reading PD Programs:
- Elementary Reading Institute (Developed by Region 6)
- Secondary Struggling Readers Institute (Developed by the Vaughn Reading Center, UT Austin)

Mathematics PD Programs:
- Elementary Mathematics Institute (Developed by Region 6)
- TEXTEAMs: Middle School Proportionality (Developed by the Charles A. Dana Center, UT Austin)

Science PD Programs:
- Bridging II TAKS: Light and Optics (Elementary Level) (Developed by Region 4)
- TEXTEAMs: Biology (Developed by the Charles A. Dana Center, UT Austin)

3. What content and delivery practices are employed in the identified sample of promising PD programs?

To describe the content and delivery practices of the selected PD programs, the evaluation team created case profiles that drew from two sources of data. First, there is a summary description of each of the PD trainings based on reports submitted by expert reviewers in the areas of reading, mathematics, and science. Additional information and analysis were drawn from a discussion with and among the reviewers in a meeting facilitated by members of the evaluation team (the complete expert review reports for each program can be found in Appendix D). Second, feedback from teachers who participated in each of the trainings is summarized. Participants of the trainings were asked to provide their perceptions regarding the overall quality of the training, how it compared to similar trainings they have participated in, their level of familiarity with the content of the training prior to attending, and expected outcomes of the training.

Each program summary includes a description of 1) the content and delivery of the PD, 2) the degree to which it is grounded in research and clinical knowledge in the content area of reading, mathematics, or science, and 3) the degree to which it is grounded in national and state standards (with special emphasis on alignment with appropriate grade-level TEKS). Each profile concludes with a general summary that includes a listing of the program's specific strengths and weaknesses.

Several caveats about this data should be noted. First, the expert reviewers were contracted to provide a third-party scholarly review of the programs considering national and Texas standards. This component of the evaluation relied on the experts' valued opinions and the evaluation team did not attempt to influence or direct the findings of these reviewers. Although others may share different opinions about the PD programs under review, the evaluation team felt it was a useful approach to examining the quality of each PD as a whole. Second, it should be noted that the descriptions of the six PD programs are not intended to support a direct comparative analysis of the merits or deficits of the various programs. The training materials for each PD were independently reviewed, and the profiles reflect that approach.

Third, in several instances, certain areas of the PD could not be assessed. Generally, this resulted due to limitations associated with the inability to observe the trainings and understand the context of its delivery. Furthermore, the PD programs were developed by and/or delivered by local ESCs who may have been implementing the programs with limited resources or offered the training in association with other trainings provided by the ESC. The evaluation did not attempt to understand the entire context of the PD trainings and the results of the expert reviews should be considered with that in mind. Finally, a common weakness of the PD programs centered on the need for updating the training materials. The evaluation team recognizes the challenge PD providers face to continually update programs, and it is important to note that many of the program materials supplied to the expert reviewers may have been outdated versions that have been or are currently being revised.

READING

The PD programs in the area of reading were reviewed by Ms. Susan M. Ebbers. Ms. Ebbers is an educational consultant with a broad range of experience in teaching, administration, and consulting. She coauthored the *Washington State K–12 Reading Model* and recently created her own set of 28 interactive, decodable *Power Readers*. She is also the author of *Vocabulary Through Morphemes: Suffixes, Prefixes, and Roots for Intermediate Grades*. These curricular materials are published by Sopris West Educational Services. Ms. Ebbers has extensive experience teaching students in grades 1–8 and has taught high achievers as well as intensive readers. She has served as a literacy coach to secondary teachers in the Tracy Unified School District, where she was honored with the Outstanding Certificated Employee Award and the A+ Literacy Award. She writes reading curriculum for Imagination Station (istation), reviews applications for the Reading First initiative, and writes and consults for the Consortium on Reading Excellence (CORE). Ms. Ebbers is enrolled as a doctoral student at the University of California, Berkeley.

Program 1: Elementary Reading Institute

Training Description. The Elementary Reading Institute is a 4-day PD training developed in-house by personnel at the Region 6 ESC. Four days of training are offered to elementary teachers, one day at a time, at approximately one-month intervals throughout the course of a semester. The materials were not apparently developed for use by trainers other than Region 6 personnel.

The institute's primary focus is on components of reading that apply to vocabulary and comprehension and specifically to four TEKS learning objectives for grades 3–6. The topics covered in each day of the training are the following:

- Day 1: vocabulary, summarization, sequencing
- Day 2: analyzing characters, setting, plot, point of view
- Day 3: using strategies to analyze text
- Day 4: drawing conclusions, fact/opinion, cause/effect, inferences

The binder of training materials is organized around these four topics/days of delivery. Each of the four sections begins with a discussion of the state standards (TEKS) for grades 3–6, including support information. Next, there is a general overview of big ideas for some of the topics. Other materials provided in the binder include graphic organizers, lesson plan ideas, applicable word and book lists, black-line masters, expository and narrative samplings, sample tests, and (for some sections) additional resources and a summary subsection and/or appendix. The reviewer noted that the binder pages were not numbered and that it might be useful for delivery to add pagination. In addition to the binder, an electronic slide presentation to accompany each day of the institute was included in the materials submitted for review, and reference was made to a "BER video," (probably Bureau of Education and Research), although a copy of the video was not included.

The delivery approach used for the institute was not immediately apparent from the binder or the slide presentation, but the reviewer assumed that each day probably includes an introductory section, followed by a lecture presentation on the applicable standards and the big ideas to be covered in the session. Then it appeared that the presenter provides participants with guidelines and time to explore the various resources and to discuss and/or practice some of the sample lessons provided. The final slide for each day prompts participant questions and appears to be a closure slide.

Research on Teaching and Learning Reading. The reviewer stated that "much of the content [of this training] is in alignment with scientifically based reading research" and that "very few items contradict research findings or clinical knowledge regarding vocabulary and comprehension." However, according to the reviewer, very little specific research is explicitly cited, so teachers are not encouraged to continue exploration of the various topics by going directly to research sources. In general, the reviewer's concerns about the research grounding of the institute did not focus on what was included in the institute but rather on what was missing.

The reviewer felt that there were some important components (especially in the areas of vocabulary and comprehension) that were absent from the training materials and suggested that the institute be updated to better coincide with current research findings in these areas. Examples of specific items to be incorporated included a larger percentage of training time spent on vocabulary development; a stronger emphasis on concepts related to instructional strategies for reading such as monitoring progress, grouping for success and differentiation, and selecting appropriate text; clarification of the relationship between fluency, vocabulary, and comprehension; better addressing the needs of English language learners; and the inclusion of correct articulation of targeted words during vocabulary instruction.

One strong point about the training materials is that they contain many useful resources for morphemic analysis that reflect current research. Another is the emphasis placed on wide reading to develop vocabulary, although the reviewer noted that it is important to identify appropriately leveled books in response to students' varying reading skills. Finally, while the institute provides a wealth of comprehension supports that benefit both teachers and students, it was suggested that the comprehension section could be strengthened by adhering more closely to the eight effective comprehension strategies outlined by the National Institute of Child Health and Human Development in 2000.

National and State Standards. The reviewer felt that the institute partially met the NSDC Standards for Professional Development. As shown in Table 9, there was insufficient information to assess whether the Context standards were addressed, but the majority of Process and Content standards were at least partially addressed. One issue in regards to the Process standards was that the training proceeds too quickly through too many different strategies to allow for deep processing and adequate practice of the tools presented. In the category of Content standards, the reviewer was particularly concerned about the lack of explicit attention given to the needs of special populations of learners (i.e., the Equity standard).

Table 9. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* Organizes adults into learning communities whose goals are aligned with those of the school and district				X
• *Leadership:* Requires skillful school and district leaders who guide continuous instructional improvement				X
• *Resources:* Requires resources to support adult learning and collaboration				X
Process Standards				
• *Data-Driven:* Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement			X	
• *Evaluation:* Uses multiple sources of information to guide improvement and demonstrate its impact			X	
• *Research-Based*: Prepares educators to apply research to decision making			X	
• *Design:* Uses learning strategies appropriate to the intended goal		X		
• *Learning:* Applies knowledge about human learning and change		X		
• *Collaboration:* Provides educators with the knowledge and skills to collaborate		X		
Content Standards				
• *Equity:* Prepares educators to understand and appreciate all students; create safe, orderly, and supportive learning environments; and hold high expectations for students' academic achievement		X		
• *Quality Teaching:* Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately		X		
• *Family Involvement:* Provides educators with knowledge and skills to involve families and other stakeholders appropriately				X

Source: Expert review report, Ebbers

A definite strength of the institute is that it is strongly aligned with the specific TEKS that it was designed to address. The training materials specifically focus on four specific TEKS relating to vocabulary and comprehension in grades 3–6. These TEKS objectives are discussed in the introductory materials and then addressed in the appropriate training sections. The reviewer noted that "because fluency is closely linked to both vocabulary and comprehension, there is a need to address and include the Texas objectives that align with fluency" and offered examples of additional TEKS that could be incorporated into the training content.

Summary. A general message relayed throughout the review was that the information presently contained in the materials is generally good (i.e., abundant materials and strategies provided that are grounded in research on reading instruction) but that it appeared to have been developed several years ago and therefore some content could be updated.

Overall, the reviewer concluded the following:

> This program has doubtless been of benefit to hundreds of teachers over the years. Many of the components in this program are of great value. With a little revising, this institute will more fully align with reading research, with practical application, and with state and national standards for reading and for high-quality professional development. . . . It offers a wealth of beneficial strategies, activities, and information to the participants, but it appears to be missing some critical content. (Ebbers, P1, p. 7)

She also stated that her knowledge about the complete training was somewhat limited by having only the binder of materials and the slide presentation available for review and acknowledged that the presenter may address "some or all of the items mentioned" in the process of actually conducting the training.

Specific strengths of this PD identified by the reviewer included the following:

- There are some helpful handouts, lists, graphic organizers, strategies, etc. They provide immediately useful and practical applications for the classroom.

- The vocabulary section appears to include a strong emphasis on teaching specific word meanings in varied context, including personal student-made context.

- Numerous effective comprehension activities are provided.

The weaknesses noted were the following:

- This program might be improved by focusing more fully on only a few key strategies.

- This program does not address the needs of diverse learners; it does not provide for differentiated instruction, nor does it make a strong statement for explicit instruction for intensive-level readers.

- This module does not provide training in use and interpretation of assessments, including screening, progress monitoring, and diagnostic tools, as they apply to fluency, vocabulary, or comprehension.

Program 2: Effective Instruction for Secondary Struggling Readers: Research-Based Practices

Training Description. This PD designed for struggling readers at the secondary level was developed at the University of Texas and delivered by the training staff at ESC Region 13 in 2005–2006. It was offered as a 3-day training both during the summer (scheduled over 3 straight days) and during the school year (1 day a week for 3 weeks). The materials provided for trainers are extensive and cover four key components of reading instruction: comprehension, vocabulary, word identification, and fluency. These topics are distributed across the 3 training days as follows:

- Day 1: Introduction and comprehension
- Day 2: Comprehension and vocabulary
- Day 3: Word identification and fluency

The binder of training materials for this PD is divided into five sections (an introductory module followed by one module for each of the four topic areas) that include speaker notes, color transparencies, participant notes, handouts, teacher resources, and references. A video and a set of "research to practice" articles are also provided to reinforce learning in the topic areas. Handouts in Spanish are included in some cases. The reviewer found the organization of the materials to be very inclusive and user-friendly. Guidance is provided for time frames and processing or delivery plans, and presenters may either follow the coded script for each transparency and handout or tailor the presentation to their specific audience or needs.

The general approach of the training is to start with big ideas (including information on the research base and applicable standards) and then progress to specific instructional strategies. Delivery methods include some lectures as well as numerous opportunities for participants to engage and interact with one another in discussion of the materials. Video clips are also used to demonstrate the strategies. Homework assignments are included in each day of the training.

Research on Teaching and Learning Reading. The reviewer examined and described each module separately, providing specific observations and suggestions about each. In general, she found that all of the modules were "aligned with current research in reading pedagogy." The introduction module provides an overview of the "big ideas" covered in the training, as well as specific research-based information about addressing the special needs of English language learners and others who are dealing with specific reading issues, such as dyslexia.

The comprehension module includes seven of the eight comprehension strategies identified by the National Reading Panel, and the reviewer suggested using these strategies as a way to organize the material in this section:

> There is so much information in this section that it might be helpful to frame it around these eight strategies. It might be helpful to have one slide that lists the "Great Eight" as they are sometimes called and to order the

rest of the strategies within that framework. This may improve retention of the many ideas collected in the comprehension section. (Ebbers, P2, p. 3)

The reviewer believed that the fluency and word identification modules are both aligned with research findings and best practices, but she had quite a few specific suggestions for improving the vocabulary module, which she said "does not contradict research, but neither does it reflect some key findings and important practices." She recommended that the vocabulary module be revised and perhaps expanded to cover 1 full day of the PD program.

National and State Standards. The materials made available for review did not include information about the context into which this PD is delivered, so it was not possible to assess whether the Context standards included in the NSDC's NSDC Standards for Staff Development were addressed or not. The reviewer did determine, however, that the majority of NSDC's Process and Content standards were fully addressed in this training. As shown in Table 10, only the use of disaggregated student data fell into the category of being "partially addressed" (and there was no information provided about the Family Involvement standard).

At the level of state standards, this PD was reported to be in alignment with the specific TEKS that it was designed to address. Applicable TEKS are listed in each module, although the reviewer pointed out that they should be presented in a more consistent format (i.e., to include the number and text for each of the TEKS). She also noted that there are so many TEKS listed (especially in the comprehension section) that it might be better to include only those that are most thoroughly addressed so as to encourage participants to focus on these. One additional comment offered about the use of TEKS in this training concerned the possible inclusion of some elementary-level TEKS because the training is designed specifically for struggling readers who may not have advanced to secondary-level TEKS:

> As it is an intervention module, it is not always in full alignment with the corresponding grade-level standards. It may be a mistake to list only TEKS for grades 4–12 when, in fact, instruction is also occurring at a foundational level using precursor (primary) TEKS as well. (Ebbers, P2, p. 7)

In general, the importance of matching training content to corresponding TEKS is recognized and addressed in this PD. Most of the reviewer's suggestions for improvement in this area had to do with alternative presentation and increasing focus on specific TEKS.

Table 10. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* Organizes adults into learning communities whose goals are aligned with those of the school and district				X
• *Leadership:* Requires skillful school and district leaders who guide continuous instructional improvement				X
• *Resources:* Requires resources to support adult learning and collaboration				X
Process Standards				
• *Data-Driven:* Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement		X		
• *Evaluation:* Uses multiple sources of information to guide improvement and demonstrate its impact	X			
• *Research-Based*: Prepares educators to apply research to decision making	X			
• *Design:* Uses learning strategies appropriate to the intended goal	X			
• *Learning:* Applies knowledge about human learning and change	X			
• *Collaboration:* Provides educators with the knowledge and skills to collaborate	X			
Content Standards				
• *Equity:* Prepares educators to understand and appreciate all students; create safe, orderly, and supportive learning environments; and hold high expectations for students' academic achievement	X			
• *Quality Teaching:* Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately	X			
• *Family Involvement:* Provides educators with knowledge and skills to involve families and other stakeholders appropriately				X

Source: Expert review report, Ebbers

Summary. Overall, the reviewer had a very positive view of this PD. She concluded the following:

> In general, this is a very well conceptualized and carefully structured program. The consistency in presentation throughout each module assists both the presenter and the learner. The Texas road map logo is not only clever; it is also consistent, thus providing cohesion. For the most part, this professional development program meets the standards for high-quality

professional development. It offers a wealth of beneficial strategies, activities, and information to the participants in the critical components necessary for adolescents who cannot read well. (Ebbers, P2, p. 8)

Her only major suggestions for improvement involved updating the vocabulary module to be more complete and in better alignment with current research in this area.

Specific strengths of the program noted in the review included the following:

- The layout, organization, and structure of the program is excellent, and the video provides an additional bonus.

- There are many helpful handouts, lists, graphic organizers, strategies, etc. They provide immediately useful and practical applications for the classroom.

- The needs of all learners are considered in this institute: those with dyslexia or any reading disability, those in need of accommodations, English language learners, etc.

The weaknesses identified included the following:

- The vocabulary section is in need of some revision to reflect new findings and trends in vocabulary instruction.

- There are too many TEKS listed, especially for comprehension. It might be better to list only the TEKS that are the most thoroughly addressed. The TEKS are listed inconsistently. In some cases, the complete TEKS objective is included, but in other cases, only the TEKS number is listed. This needs to be addressed.

MATHEMATICS

The mathematics PD programs were reviewed by Dr. Maggie Myers. Dr. Myers holds a BS in secondary mathematics education from Slippery Rock University (1976), an MA in mathematics from the University of Tennessee (1979), and an MS and a PhD from the University of Maryland in mathematical statistics (1988). From 1992 to 2003, she was a senior research associate at the Charles A. Dana Center. In her position, she provided mathematics content expertise to guide material development for the Mathematics TEKS Toolkit. She specialized in early childhood and elementary mathematics. Presently, Dr. Myers is a lecturer in the Department of Computer Sciences at the University of Texas and a mathematics education consultant. Consulting with the National Partnership for Quality Afterschool Learning, she observes promising afterschool programs to identify effective practices, guides materials development for disseminating research-based supports, and conducts training. Working with the mathematics team at the Charles A. Dana Center, she continues product development for the Mathematics TEKS Toolkit, concentrating on middle school materials.

Program 3: Elementary Mathematics Institute

Training Description. The Elementary Mathematics Institute was developed and is delivered by staff at ESC Region 6. Level I of the institute is an extensive PD program for elementary mathematics teachers offered 1 day at a time at approximately 1-month intervals throughout the course of the school year. There are two additional multi-day trainings in the PD series (Level II: Follow Up and Inquiry and Level III: Multimedia), but only the initial 7-day institute (Level I: Concept Development) is included in this review. The materials include very little information about delivery, probably because they were designed for the use of Region 6 trainers only. After reading through the content, the reviewer assumed that the general approach taken in presenting the materials was some lecture with discussion, supported by numerous hands-on activities for participants. There is a strong focus on teacher implementation in this PD. Participants are asked to complete a form that lists under each day what they are committed to implementing (e.g., activities that they plan to take back to their classrooms).

A very thick binder focusing on content and resources was made available for review. Each day of the institute focuses on a different topic in mathematics, and they are organized in the following way:

- Day 1: Tools and place value
- Day 2: Addition and subtraction
- Day 3: Multiplication and division
- Day 4: Fractions
- Day 5: Geometry
- Day 6: Measurement
- Day 7: Probability and statistics

The training materials are introduced with a general discussion of how children learn mathematics, which sets the stage for using a problem-solving approach to learning. A history of mathematics education issues is also provided, which includes a broad overview of the National Council of Teachers of Mathematics (NCTM) Standards and the TEKS. Other introductory materials include information about using manipulatives, mathematics journals, literature connections, estimation strategies, and rubrics. Following the introductory piece, each section in the training binder focuses on a single topic. All of the sections begin with a table of contents and then move into a discussion of insights and research about how children think about the specific topic. Next is a section on instructional strategies and a discussion of the early development of ideas, which often begins with the use of concrete models and progresses into symbolic representations. Activities are included in each section, including materials for teachers to use in their classrooms. Additional resources (e.g., lists of children's literature) are also provided in some of the sections.

Research on Teaching and Learning Mathematics. The reviewer found that the "new knowledge, skills, and understandings about teaching and learning in mathematics" in this training are generally grounded in research. Participants are provided with citations for research at the beginning of each section that describe classroom instructional

strategies that have been shown to be effective. She pointed out, however, that the materials could be enhanced by applying research described by the National Research Council (2001) in *Adding It Up: Helping Kids Learn Mathematics* (e.g., strategies that encourage students to communicate with each other and with instructors to explain and clarify their thinking). Other suggestions for adding to the research base of the materials included incorporating strategies to help students recognize patterns and "regularities" and giving more attention to alternative models and problem types for addition, subtraction, and multiplication.

As previously mentioned, the reviewer did not have access to much information about how the training is delivered, so it was difficult to judge how well it adhered to research on "best practices." She did note, however, that it seemed likely that the trainer/developer supports participants before, during, and after the training and that participants "work in different groupings that ensure collaboration and require collective participation during the professional development." If the latter is true, then it is also possible that collaboration continues among participating teachers if they are from the same school. This would increase the chances that the training will "cause greater improvements in teachers, as they have ample time to implement what they learn and discuss the use of new practices with their peers."

National and State Standards. The training materials provide a broad overview of both state and national standards, but the reviewer was concerned that this component of the PD was somewhat dated. For instance, she noted, "Much of the material seems to be based on the 1989 NCTM Standards with the K–4/5–8/9–12 bands instead of the more recent [2000] preK–2/3–5/6–8/9–12 bands of the Principles and Standards for School Mathematics."

The reviewer found that the only NSDC Standards for Professional Development explicitly addressed in this PD were some of the Process and Content standards. As shown in Table 11, these included the Research-Based, Design, Equity, and Quality Teaching standards. There was no information provided about the context of the training, about several of the Process Standards, or about the issue of family involvement.

Regarding state-level standards, the reviewer found this PD to be partially aligned with TEKS. The content in only 2 of the 7 days of training identifies the specific TEKS associated with the day's topic, and in one of these cases, the TEKS given are general, rather than grade-specific. The final section on probability and statistics is the best aligned with TEKS, providing a list of appropriate topics for specific grade levels as well as a grade-level description of the specific TEKS topics covered.

Table 11. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* Organizes adults into learning communities whose goals are aligned with those of the school and district				X
• *Leadership:* Requires skillful school and district leaders who guide continuous instructional improvement				X
• *Resources:* Requires resources to support adult learning and collaboration				X
Process Standards				
• *Data-Driven:* Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement				X
• *Evaluation:* Uses multiple sources of information to guide improvement and demonstrate its impact				X
• *Research-Based*: Prepares educators to apply research to decision making		X		
• *Design:* Uses learning strategies appropriate to the intended goal		X		
• *Learning:* Applies knowledge about human learning and change				X
• *Collaboration:* Provides educators with the knowledge and skills to collaborate				X
Content Standards				
• *Equity:* Prepares educators to understand and appreciate all students; create safe, orderly, and supportive learning environments; and hold high expectations for students' academic achievement		X		
• *Quality Teaching:* Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately		X		
• *Family Involvement:* Provides educators with knowledge and skills to involve families and other stakeholders appropriately				X

Source: Expert review report, Myers

Of greater concern to the reviewer was the fact that although this PD is designed for elementary school teachers, it provides training for sixth-grade teachers, who must adhere to the learning objective requirements of middle school, not elementary, level TEKS (i.e., elementary TEKS are for K–5). She thought that this lack of clarity about the grade-level appropriateness of certain activities could cause some problems:

> This professional development seems to be designed for K–6 and focuses
> to a great extent on the content in the upper grades (i.e., many of the topics

covered are actually aligned with middle school TEKS). Since the level of the mathematics and alignment with TEKS is not addressed in many parts of the professional development, elementary teachers may believe they must develop these concepts in their classrooms. (Myers, P3, p. 4)

The reviewer acknowledged the importance of teachers knowing the expected progression of their students' mathematical development so that they understand how what they teach fits into the longer-term scheme. However, she thought it was also important for teachers to focus on the specific TEKS that define what the children in their classrooms are expected to know and be able to do, and this was what she thought was unclear in some portions of this training.

Summary. According to the reviewer, this PD program is:

> . . . designed to deepen educators' content knowledge, providing them with research-based classroom instructional strategies (such as journaling, using manipulatives, promoting certain conceptual models for arithmetic operations, making connections with children's literature, and teaching mathematics meaningfully) to assist students in meeting rigorous academic standards. (Myers, P3, p. 4)

She felt that it generally succeeded in its focus on quality teaching, providing "good research references and many useful teaching strategies and activities." She also concluded that the materials could be tightened up to be more coherent overall and felt that differences in learning objectives for different grade levels should be clarified.

Identified program strengths included the following:

- The 7-day PD occurs over a period of several months, giving ample time for teachers to practice and discuss what they learn in the training. It consists of research-based instructional strategies and deepens the content knowledge and understanding of the participants. It provides insights into how students learn mathematics and gives suggestions about meaningful teaching.

- The PD is rich in resources and tools. It provides example activities that teachers can take back to try in their classrooms and gives teachers insight into how students learn mathematics.

- The PD asks participants to reflect on and commit to implementing what they learn in their classrooms.

Specific weaknesses noted were the following:

- The PD is not directly tied to the TEKS. The K–6 focus may mean the participants do not understand what is appropriate for a particular grade level.

- The PD does not address most of the NSDC Standards for Staff Development. It could be that the developer actually does meet many of these standards when delivering, but this is not reflected in the training materials that focus on content. It may also be that the training was developed before the NSDC standards were created.

- Materials seem somewhat dated. While resources do make mention of the NCTM Principles and Standards for School Mathematics, most of the materials relate to 1989 standards.

Program 4: TEXTEAMS – Rethinking Middle School Mathematics: Proportionality Across the TEKS

Training Description. This PD is a 5-day program developed by the Charles A. Dana Center at the University of Texas and is delivered by trainers at several regional ESC offices. It is generally offered 1 day at a time across several months but is also offered by at least one ESC as a more intensive PD during the summer (i.e., 3 days in a row in the summer, followed by 1 day of training in the fall). At least three different ESCs offer this PD as a 3- or 4-day workshop rather than as a 5-day program.

The PD uses a trainer-of-trainers model, and the general approach followed in the training is to investigate a few activities with an emphasis on in-depth understanding (i.e., a "less is more" model). The training process includes hands-on activities and discussions, and participants are asked to learn in the same way that they are asked to teach.

The general content and topics for each day are as follows:

- Day 1: Introduces characteristics, language, and representations of proportional relationships and compares proportional and nonproportional relationships
- Day 2: Explores the concept of a ratio as a way to describe proportionality and uses concepts of unit rates to solve problems
- Day 3: Investigates proportional relationships in geometry
- Day 4: Investigates proportional relationships in measurement and probability
- Day 5: Investigates proportional relationships and percents and synthesizes the concepts developed in the training

These topical divisions are used to organize the PD materials in the training notebook that was available for review. The notebook begins with a table of contents and then presents the materials for each day of the training. Most days are broken into two sections, each of which begins with a table outlining the activities, concepts, and materials needed for that particular portion of the training. Other materials provided for each section include transparencies, handouts, notes, and questions and answers to encourage participant reflection and deeper processing. Each section ends with a "reflect and apply" exercise.

Research on Teaching and Learning Mathematics. The reviewer found the sections on new knowledge, skills, and understanding about teaching and learning to be well

grounded in current research. Although research is not directly quoted, the materials on how students understand fractions, ratios, and proportions aligned with established research findings in these areas. The fact that the entire PD is designed to focus specifically on the topic of proportional reasoning also reflects current definitions of the "big idea in middle school mathematics":

> Proportional reasoning is formally introduced in middle school. Proportional reasoning in the research has been described as the capstone of elementary school mathematics and the gateway to higher mathematics. The conceptual aspects of proportionality play out in three types of problems [missing value, numerical comparison, and qualitative comparison]. . . . Traditionally, instruction has focused primarily on missing value and to a lesser extent on numerical comparison. On the 1996 NAEP, only 12% of eighth-grade students could solve a problem on comparing two rates. So proportional reasoning is a crucial problem for middle school instruction. (Myers, P4, p. 2)

The reviewer identified specific examples of activities in the training materials that provide students with the opportunity to explore proportional situations in a variety of contexts, which will, in turn, help them be better prepared for the more advanced concepts included in secondary mathematics curriculum.

National and State Standards. The reviewer determined that the materials reflect both content and process standards established for middle school in the National Council of Teachers of Mathematics' Principles and Standards for School Mathematics (PSSM). As shown in Table 12 below, the reviewer also demonstrated that the majority of the NSDC's Standards for Staff Development were at least partially addressed in this PD, although the reviewer had to make some assumptions about the Context standards because information on the context of training delivery was not provided. Because the training is primarily focused on content, only the Design and Learning standards in the Process category were obviously addressed. The Quality Teaching standard was fully addressed, and the Equity standard was partially addressed. This latter rating was tied to concerns about the lack of attention in the training given to the issue of maintaining order and controlling environmental aspects in the classroom. The reviewer pointed out that this is a major concern for many teachers and that its not being addressed could negatively affect the degree of lasting change achieved by this training.

One of the strengths of this PD is that it is very much focused on the middle school TEKS for mathematics. According to the reviewer, all of the activities are aligned with TEKS; both focus TEKS (which provide the main objective for an activity) and other related TEKS are specifically referenced, and all appropriate TEKS are addressed. She did note that the TEKS used in the training materials for this PD will need to be updated to match the new set of TEKS recently released in Texas.

Table 12. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* Organizes adults into learning communities whose goals are aligned with those of the school and district		X		
• *Leadership:* Requires skillful school and district leaders who guide continuous instructional improvement		X		
• *Resources:* Requires resources to support adult learning and collaboration		X		
Process Standards				
• *Data-Driven:* Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement				X
• *Evaluation:* Uses multiple sources of information to guide improvement and demonstrate its impact			X	
• *Research-Based*: Prepares educators to apply research to decision making			X	
• *Design:* Uses learning strategies appropriate to the intended goal	X			
• *Learning:* Applies knowledge about human learning and change		X		
• *Collaboration:* Provides educators with the knowledge and skills to collaborate			X	
Content Standards				
• *Equity:* Prepares educators to understand and appreciate all students; create safe, orderly, and supportive learning environments; and hold high expectations for students' academic achievement		X		
• *Quality Teaching:* Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately	X			
• *Family Involvement:* Provides educators with knowledge and skills to involve families and other stakeholders appropriately				X

Source: Expert review report, Myers

Summary. In general, the reviewer was very positive in her assessment of the materials used in this PD. She concluded the following:

> The professional development concentrates on quality teaching. The training promotes active learning and collective participation. It is coherent and conceptual, asking participants to reflect on their practice and to learn in the same way they are expected to teach. (Myers, P4, p. 4)

She also noted that the trainer-of-trainers model used in this PD allowed for it to be delivered by many different presenters.

Specific strengths of the program identified in the review included the following:

- The PD consists of research-based instructional strategies and deepens the content knowledge and understanding of the participants.

- The PD is directly tied to the TEKS. Activities are developed from the learning goals of targeted TEKS, and other TEKS are directly mentioned in the margins of the materials if they are addressed in an activity. It is consistent with goals, standards, and assessment.

- The PD models "less is more" and integrates the use of activities that can be taken back into the classroom with adult learning. It uses active learning and asks participants to learn in the same way they are expected to teach.

Weaknesses noted were the following:

- The training may or may not be offered over an extended period of time. It may or may not employ skillful school and district leaders who guide continuous instructional improvement. While it organizes adults into learning communities during sessions, mechanisms for lasting collaboration are not addressed.

- The PD does not address all of the NSDC Standards for Staff Development. It could be that when delivering, the presenter actually does meet many of these standards, but this is not reflected in the training materials, which focus on content.

- The contexts for training delivery are not addressed. While the training was designed for flexible delivery of consistent content across the state, it does not take into account variations in needs and leadership in different districts.

SCIENCE

The two PD programs in the area of science were reviewed by Dr. Suzanne Stiegelbauer. Dr. Stiegelbauer is an associate professor in educational leadership at Texas State University and is also affiliated with the Ontario Institute for Studies in Education of the University of Toronto (OISE/UT). She has worked extensively with research on school change and professional development with Michael Fullan, Ken Leithwood, and Stephen Anderson at OISE/UT and the DOE/Texas CBAM project with Drs. Shirley Hord, Susan Loucks-Horsley, and Gene Hall. She is currently a consultant on the afterschool toolkits for the arts and for professional development sponsored by the Southwest Educational Development Laboratory. She is also a former high school teacher.

Program 5: Bridging II TAKS Module 2: Light and Optical Systems

Training Description. Personnel at ESC Region 9 who delivered this PD during the 2005–2006 school year identified it as one that met the criteria for this evaluation. The module was presented as a 2-day training for elementary school teachers in grades 1–5. The first day of training focuses on grades 1–2 and the second on grades 3–5. A third day of training follows for teachers in grades 6–8, but the module discussed here only includes materials for days 1 and 2. The training materials submitted for review consisted of a binder of science curriculum resources for elementary level classrooms. There was no information included in the binder about the context in which the training takes place or about the actual process of delivering the materials to participants. Discussion of this PD, then, focuses entirely on the content of the resource materials.

The module introduction is divided into three sections and establishes a strong priority of linking all training information to TEKS and TAKS. The first section provides an overview and explanation of TAKS, including expectations related to specific items that might appear on the TAKS test. The second section focuses on understanding the TEKS, with descriptions of specific elementary science TEKS including primary objectives, expectations of students, and student questions that might arise. The third section returns to the TAKS, focusing on objectives for elementary science, and provides additional information and guidance for teachers about the meaning of each objective and ways to help students. The theme of focusing on the TEKS and TAKS is emphasized throughout the entire training.

Following the introduction, the module presents activities for grades 1–5 related to the science content area of light and optical systems. Each grade level has its own specific topic area within the broader category of light and optics. The grade specific topics are as follows:

- Grade 1: Magnificent Magnifiers
- Grade 2: Me and My Shadow
- Grade 3: Star Power
- Grade 4: Nature's Reflections
- Grade 5: Reflecting on Refraction

The content in each grade level becomes increasingly complex, with students in the older grades making greater use of group roles in predicting, describing, and evaluating information. The primary instructional strategy used throughout all grade level materials is the "5 Es" (Engage, Explore, Explain, Elaborate, and Evaluate), and there are activities relating to each of these approaches to learning provided in all topic areas. Materials for each grade level also include interdisciplinary connections, background content information for teachers, materials needed for specific activities, a link to content-area TEKS, reading connections, references and related readings and Web sites, and master copies of student worksheets and other materials.

Overall, the materials for this PD are presented in a well-organized and user-friendly way. For example, there are visual icons used throughout the binder to alert the teacher to

things such as safety and interdisciplinary issues and materials needed for specific activities. The reviewer noted that the "structure is well thought-out, easy to use, and would help a teacher 'learn as she goes.'"

Research on Teaching and Learning Science. According to the reviewer, the module is based on good practice in science teaching and learning and provides developmentally appropriate learning activities for children. Use of the 5 Es instructional strategy provides a good approach for following the scientific method as it might be used in any context. Teachers are given the opportunity to try out the student activities and to connect them with corresponding TEKS and TAKS in order to better understand how to meet established learning objectives. In addition, suggestions for further reading included in the materials provide participants with the option to extend their knowledge in specific areas. In general, the reviewer concluded that "the activities in the binder/module immerse teachers and students in well-grounded science-based content and instructional methods." However, she stressed that the literature on high-quality PD in science and mathematics supports the process of developing increased expertise over time through immersion experiences and continuing reflection and feedback—crucial components that are not addressed in this PD.

National and State Standards. The materials provided in the binder adhere to the processes outlined by the National Standards for Science Education (NSES). According to the reviewer, they contain

> . . . activities that are based in scientific and inquiry processes, using appropriate to grade-level procedures that involve students in actively exploring material, providing time and structure for discussion and group work, assessing understanding, and sharing responsibility for learning with others. The activities in the module are based on state and national standards, the TEKS and TAKS, and follow the standards-based requirements for science content in the area. (Stiegelbauer, P5, p. 3)

Information pertaining to other NSES standards, such as engagement in collaborative and "lifelong learning through feedback on work and sharing of expertise" was not provided in the review materials.

Regarding the NSDC Standards for Staff Development, the materials obtained for review did not include information about a longer-term PD strategy or about the context in which the training is delivered. As a result, the only NSDC standards directly addressed in the module pertain to Process and Content. As shown in Table 13, the reviewer determined that the NSDC standards most explicitly addressed in the materials available for review were Quality Teaching (all aspects described in the standard are addressed), Design (by use of the 5 Es strategy), Learning, and, to a certain degree, Equity (the PD stresses creating a safe environment and maintaining high expectations, but there is no mention of serving students with differing needs). There was inadequate information provided to assess whether the remaining NSDC standards were addressed.

Table 13. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* Organizes adults into learning communities whose goals are aligned with those of the school and district				X
• *Leadership:* Requires skillful school and district leaders who guide continuous instructional improvement				X
• *Resources:* Requires resources to support adult learning and collaboration				X
Process Standards				
• *Data-Driven:* Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement				X
• *Evaluation:* Uses multiple sources of information to guide improvement and demonstrate its impact				X
• *Research-Based*: Prepares educators to apply research to decision making		X		
• *Design:* Uses learning strategies appropriate to the intended goal	X			
• *Learning:* Applies knowledge about human learning and change	X			
• *Collaboration:* Provides educators with the knowledge and skills to collaborate				X
Content Standards				
• *Equity:* Prepares educators to understand and appreciate all students; create safe, orderly, and supportive learning environments; and hold high expectations for students' academic achievement		X		
• *Quality Teaching:* Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately	X			
• *Family Involvement:* Provides educators with knowledge and skills to involve families and other stakeholders appropriately				X

Source: Expert review report, Stiegelbauer

One of the biggest strengths of this PD is that it is very explicitly aligned with the TAKS and TEKS. The introduction to the module provides an extensive discussion of both TAKS and science TEKS, including a guide for teachers to use to better understand TEKS objectives in terms of knowledge and skills addressed and student expectations. All of the activities included in the materials are designed around specific TEKS objectives for grades 1–5. TEKS specifically related to light and optics are described in terms of the 5 Es, with an emphasis on achieving an outcome that meets the objective. Because of the emphasis placed on interdisciplinary activities, non-science TEKS (e.g.,

language arts, social studies, mathematics, arts, and physical education) are included for each grade level as well. The reviewer described the module as being "thoroughly grounded in the TAKS and TEKS," and said that its major focus "is to address the TEKS and . . . TAKS questions and to build knowledge and skills in students such that they can achieve TEKS learning goals and do well on the TAKS."

Summary. After reviewing the NSES standards and other characteristics of high-quality PD in science, the reviewer concluded that

> . . . while the binder/module is well developed and does address some of these standards, the ability of participants to engage in lifelong learning through feedback and sharing of expertise is missing from the materials available for review. To be high-quality professional development, the module would need to be part of a larger explicit strategy for deepening understanding and use, one that is sequential, sustained, and grounded in reflection, critique, and support. What is here is the information that might be the centerpiece of a professional development strategy, not the strategy itself, with the exception of teacher self-instruction. (Stiegelbauer, P5, p. 5)

Specific strengths of the program identified by the reviewer included the following:

- This is a user-friendly module outlining activities based on TEKS and TAKS goals for 5 grade levels on light and optics. Activities link to interdisciplinary possibilities, show needed materials to set up lessons, and alert teachers to safety issues.

- The 5 Es instructional model works for both teachers and students in that it provides a process based on the scientific process itself that guides and tests learning. As teachers follow that process, they can apply it to other settings.

- It includes a clear outline of expectations for TAKS and TEKS and a discussion of how to think about working with them. Teachers learn about how TAKS and TEKS objectives and questions are constructed and how that relates to what they should teach.

The weaknesses noted were the following:

- There is no discussion of context. How is this to be used by teachers? What support will they get? Do they see a model of a sample activity? How is this part of a longer-term strategy to improve science teaching?

- There is no discussion of how teachers might help each other learn to teach science (collaborative inquiry).

- There is no data on student or teacher need related to a starting point for the activities in the module. How would a teacher tailor this for different groups?

Program 6: TEXTEAMS: Biology Institute

Training Description. This PD program was developed by the Charles A. Dana Center at the University of Texas and is delivered to teachers in several ESC regions. Although the complete set of training materials obtained for review include content for a 5-day institute, various ESCs have offered it in the past few years as a 1-, 2-, or 3-day training, presumably tailoring it to their specific needs. This review encompasses all 5 days of training content.

The institute is facilitated by science teaching experts and is designed to address specific TEKS at multiple grade levels for secondary biology teachers. The first 3 days of the training are spent on biology concepts (specifically, genetics and biological evolution) and applications to TEKS, and the last 2 days are spent on understanding and developing appropriate assessment strategies. Each day's presentation includes an overview of the day's topic, time to work through sample activities related to the specific concepts covered, and time at the end of the day for reflection and discussion. Examples of the types of materials and resources provided include articles to read, sample activities, physical materials needed for experiments (e.g., microscopes and computers), and suggestions for where to find additional information. The strategy for presenting the materials is extensive, including intellectual, conceptual, practical, and meta-cognitive components.

The reviewer noted that "all days of the institute are intensive, requiring focused work on the part of participants." Teachers are asked to participate in discussions of the initial presentations each day, complete charts relating learning to TEKS, read articles on targeted topics, conduct experiments, work both individually and in small groups, write down comments and reflections, and develop content and assessments to take back to their classrooms. There is a consistent focus in all of the training activities on relating content knowledge to the TEKS and developing appropriate assessment strategies.

Research on Teaching and Learning Science. The content of the institute is based on the biology TEKS and on research on assessment and standards. Activities, such as the experiments that participants conduct, use scientific methods for data collection and analysis. The reviewer also noted that the overall delivery process in this training uses a scientific approach:

> Science is based on moving from observing a natural process to testing and analyzing it to ensure understanding. Good professional development in science works the same way. Because of the need to "understand" phenomena from multiple perspectives (how to teach, what to teach, relating to TEKS goals, expectations for grade level, strategies for working with students, appropriate assessments), this institute has embedded a similar process in its approach to professional development.

> Teachers are presented with concepts, allowed to discuss and experiment
> with them, then apply their understandings to the TEKS goals and working
> with students. Teacher knowledge is developed in a variety of ways:
> listening, seeing, experimenting, relating, and applying. (Stiegelbauer, P6,
> p. 5)

In addition, participants are provided with numerous research citations and references to
extend their learning about both science content and the teaching process.

National and State Standards. The reviewer found that the training materials for this
institute are well grounded in both national and state standards for science instruction. In
the course of the 5-day training, participants are engaged in all the following processes
for teaching science outlined in the National Science Education Standards (NSES):

- Focusing on the use of scientific and inquiry processes
- Guiding students in active and extended scientific inquiry
- Providing opportunities for discussion and debate
- Continuously assessing understanding
- Sharing responsibility for learning with other learners

Many of the NSDC Standards for Staff Development are also addressed (see Table 14
below). In reference to the Context standards, the reviewer noted that the institute
organized participants into learning groups and encouraged collaborative learning, but
there was no information provided on the Leadership standard. All but one of the Process
standards were at least partially addressed, as were the Equity and Quality Teaching
standards in the Content category.

The reviewer also noted that standards related to continuous learning, improvement, and
support (discussed in the research on science PD and contained in the NSDC Context
standards) were not adequately addressed in the materials available for this review:

> While the institute is strong on immersion and teacher support within its 5
> days, it does not, in the outline reviewed here, provide a plan of support
> and refinement for teachers. . . . In the ideal, the institute would be
> embedded in a more comprehensive strategy for professional
> development, one that provides sequential learning over time, feedback,
> mentoring and modeling, and discussion with peers (Stiegelbauer, P6, pp.
> 6, 8)

The case for the need to include a plan for ongoing teacher support is
strengthened by the fact that this training contains so many materials. The
reviewer had some concerns about how well nonspecialists would be able to
deliver the training content, as well as how capable students would be of doing
the high-level work proposed.

Table 14. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* Organizes adults into learning communities whose goals are aligned with those of the school and district	X			
• *Leadership:* Requires skillful school and district leaders who guide continuous instructional improvement				X
• *Resources:* Requires resources to support adult learning and collaboration	X			
Process Standards				
• *Data-Driven:* Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement				X
• *Evaluation:* Uses multiple sources of information to guide improvement and demonstrate its impact		X		
• *Research-Based*: Prepares educators to apply research to decision making	X			
• *Design:* Uses learning strategies appropriate to the intended goal	X			
• *Learning:* Applies knowledge about human learning and change		X		
• *Collaboration:* Provides educators with the knowledge and skills to collaborate	X			
Content Standards				
• *Equity:* Prepares educators to understand and appreciate all students; create safe, orderly, and supportive learning environments; and hold high expectations for students' academic achievement		X		
• *Quality Teaching:* Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately	X			
• *Family Involvement:* Provides educators with knowledge and skills to involve families and other stakeholders appropriately				X

Source: Expert review report, Stiegelbauer

It is a strength of the institute that it is very focused on the TEKS. The materials provide links between the science content and applicable TEKS and also use the TEKS when discussing and working with appropriate assessment strategies. On the first day of the training, participants are provided with an overview of TEKS goals for grades 6–10 and are asked to examine the progression of biology knowledge and skills expected in grades 6–8. All learning exercises in days 1, 2, and 3 draw teachers' attention to the TEKS as well as the TAKS.

Summary. In general, the review of the biology institute was very positive. The reviewer found it to be "comprehensive, engaging in its process, and a good learning experience for science teachers." She also judged the content to be research-based and said that the training as a whole addresses many of the established standards for good PD. Her concerns tended to be focused on the amount of information presented, not on its quality or the process of delivery:

> In reality, much was presented in the institute's 5 days. Likely what was presented was almost more than could be absorbed. The strength of the institute in terms of outcomes will depend on how teachers use the information once they return to their classrooms. (Stiegelbauer, P6, p. 11)

Overall, she thought that this PD could have a positive impact on science teaching if ongoing conceptual, technical, and practical support were provided.

Specific strengths of the institute noted in the review included the following:

- Presentation of goals and major concepts addressed each day

- Modeling and mentoring of specific activities

- Development of teacher understanding skills through
    - reading short articles related to the topic or issue;
    - using visual, written, and hands-on work to deepen understanding following the suggested student format of iconic (visual), symbolic (reading and thinking), and enactive (doing) tasks;
    - anticipating questions and concerns;
    - working individually and in groups to conduct sample experiments and tasks (approximately 20); and
    - relating issues and experiments to TEKS and grade-level expectations

- Providing time for discussion and reflection, using written reflections to guide the next day's work

- Learning essential science content through the perspective and methods of inquiry involving teachers in actively investigating phenomena, interpreting results, making sense of findings consistent with currently accepted scientific understanding, including discussing, reflection, and collaboration in learning.

- Integrating knowledge of science, learning, pedagogy, and students and applying that to science teaching

- Relating issues and experiments to TEKS and grade-level expectations

Weaknesses identified included the following:

- Materials reviewed are unclear as to the overall time frame and support provided to teachers as part of a comprehensive PD strategy.

- There is no obvious assessment of teacher needs and skills prior to attending the institute and no information about how the institute would utilize the skills of more expert science teachers attending or develop the skills of less experienced teachers, other than group work and presentation of materials

- Relevant but fairly technical activities require expertise in setting up and discussing; they also require science and teaching expertise.

- The complexity of the content raises concerns that even a 5-day time period may not provide enough time for practice and using new information. Even the assessment days could be challenging for some teachers in developing good questions based on models. Some teachers may be overwhelmed.

Survey Results of Training Participants

An additional perspective on the six regional PD programs was provided by teachers who attended them during the 2005–2006 school year. Participants in each of the trainings received a survey and were asked to comment on: factors that influenced their decision to attend, the quality of the training they attended, and what outcomes they thought would result from having attended. Since the survey response rates for some individual programs were low and since responses did not vary a great deal from one PD to the next, the data from participants in all six programs is combined in the discussion below. Responses from a total of 72 teachers (response rate 14%) across the six PD programs are included.

Factors That Influenced Teachers' Decisions to Participate in the Trainings. *One* component of the evaluation of the high-quality regional PD was to understand the factors that contributed to teachers' decisions to participate in these trainings. A question on the survey presented respondents with a list of possible factors and asked them to indicate how much influence each of these factors had on their decision to attend the particular PD they had been a part of. Each of the factors and their corresponding degrees of influence are shown in Table 15.

Table 15. Factors Influencing Participation

Factors	No Influence		A Little Influence		Some Influence		Strong Influence		Total N
	N	%	N	%	N	%	N	%	
Stipend	49	72%	3	4%	8	12%	8	12%	68
Principal/administrator	38	53%	7	10%	7	10%	20	28%	72
Content	4	6%	6	8%	17	24%	45	63%	72
Location	16	22%	8	11%	23	32%	25	35%	72
Length	32	44%	14	19%	18	25%	8	11%	72
Time of year	28	39%	8	11%	23	32%	13	18%	72
Sponsor	34	47%	8	11%	12	17%	18	25%	72
Requirements	26	36%	15	21%	15	21%	16	21%	72
Recommendations	34	47%	7	10%	18	25%	13	18%	72

Source: Analysis of Teacher Participant Surveys

These data indicate that the most important influence on teachers' decisions to participate in these PD programs was the content of the training (a strong influence for 63% of respondents). Somewhat surprisingly, the availability of a stipend had the least influence on teachers' decisions (72% reporting no influence). It may be, however, that stipends were not an issue in their decisions because they were not offered for these particular trainings. The influence of principals or administrators appeared to have either no influence (53%) or a strong influence (28%) on a large majority of the respondents. Teacher responses were mixed in terms of other factors, such as logistical issues, the training sponsor, and recommendations from others.

Teacher Perceptions of Training Quality. The survey contained several items about the quality of the trainings. First, teachers were asked to rate the overall quality of the training in which they participated and second, to compare their experience in this training to their experience in other similar trainings (i.e., in the same content area). The responses to these items are summarized in Figures 1 and 2.

Figure 1. Overall Quality of PD Trainings
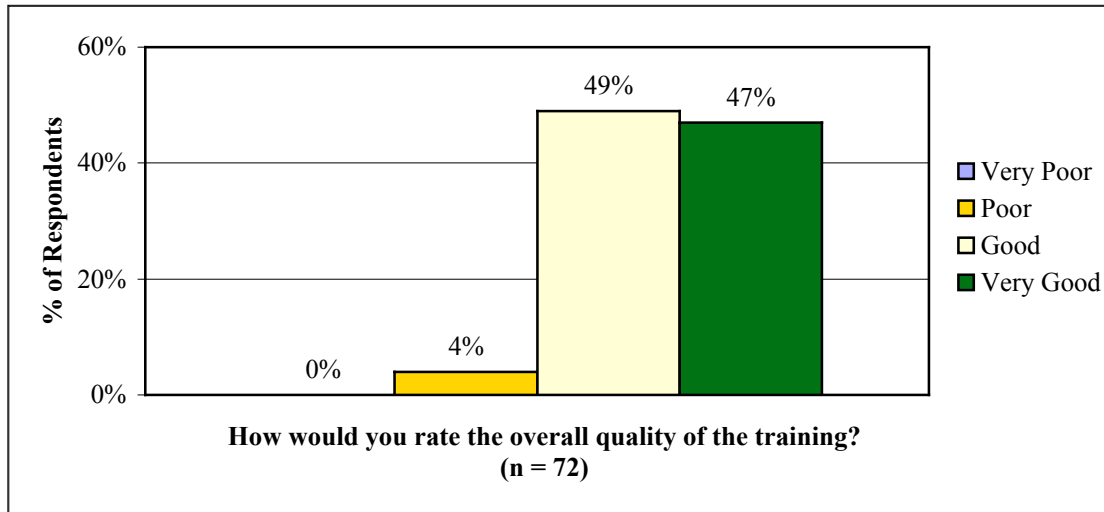
Source: Analysis of Teacher Participant Surveys

Responses illustrated in Figure 1 show that most respondents rated the overall quality of the regional trainings quite favorably. Nearly all (96%) of the teachers responding to this item felt that the quality of the PD they attended was "good" or "very good."

Figure 2. Comparison With Similar Trainings
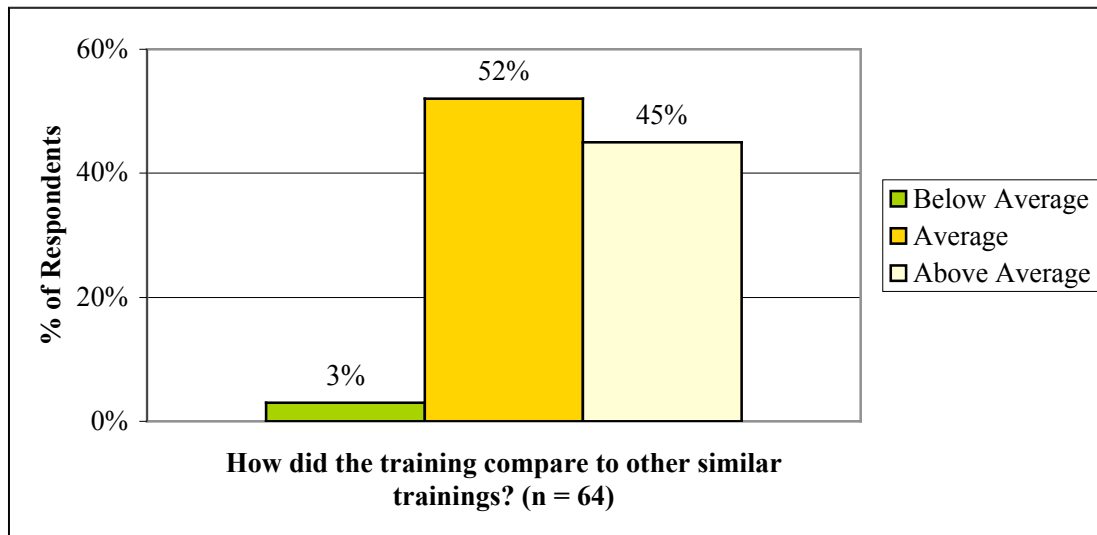
Source: Analysis of Teacher Participant Surveys

When asked to rate how the trainings compared with other trainings that they had previously attended in the same content area, a little over half (52%) of the teachers thought that the trainings were "average," and a slightly smaller percentage (45%) thought that they were "above average" in comparison.

Another measure of the quality of the PD is based on teachers' perceptions of whether the trainings provided new information. Respondents were asked to describe how familiar they were before participating with the content of the trainings in two areas: teaching strategies and the overall subject matter covered. Figures 3 and 4 show respondents' reported levels of prior knowledge in these two areas.

Figure 3. Previous Familiarity With Teaching Strategies
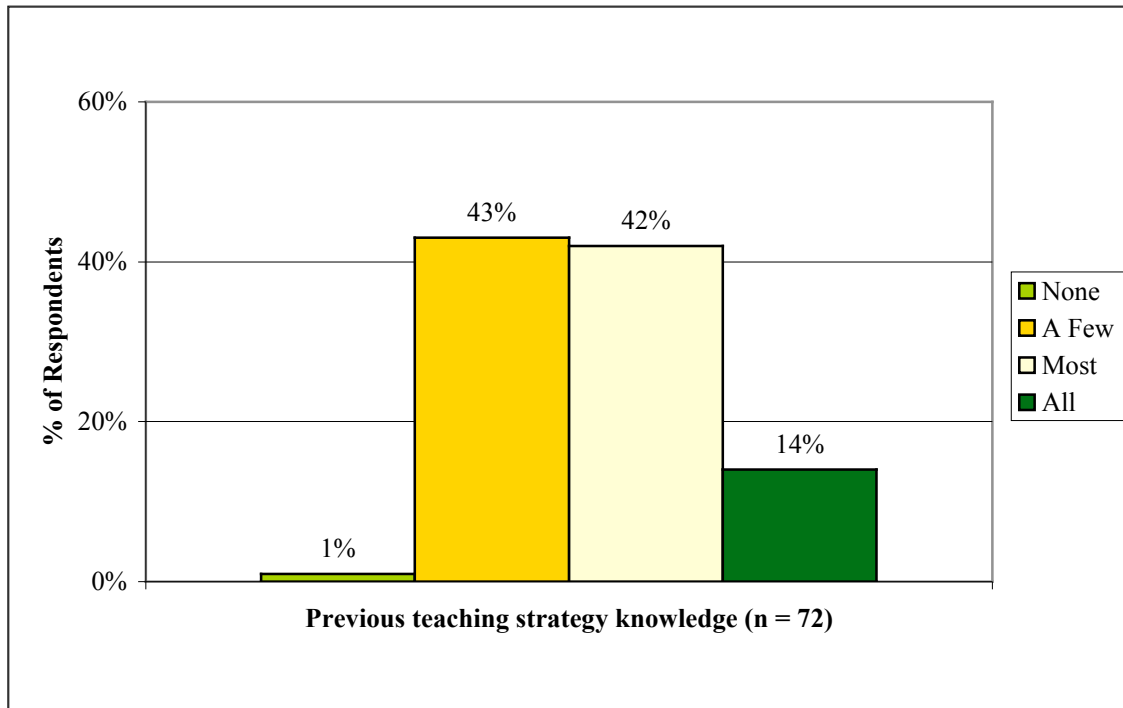
Source: Analysis of Teacher Participant Surveys

Just over half (56%) of the teachers completing the survey indicated that they were familiar with "most" or "all" of the teaching strategies discussed in the trainings, and 43% said that they were only familiar with a "few." Only 1% of respondents said that they were not familiar with any of the strategies presented.

Figure 4. Previous Familiarity With Subject Matter
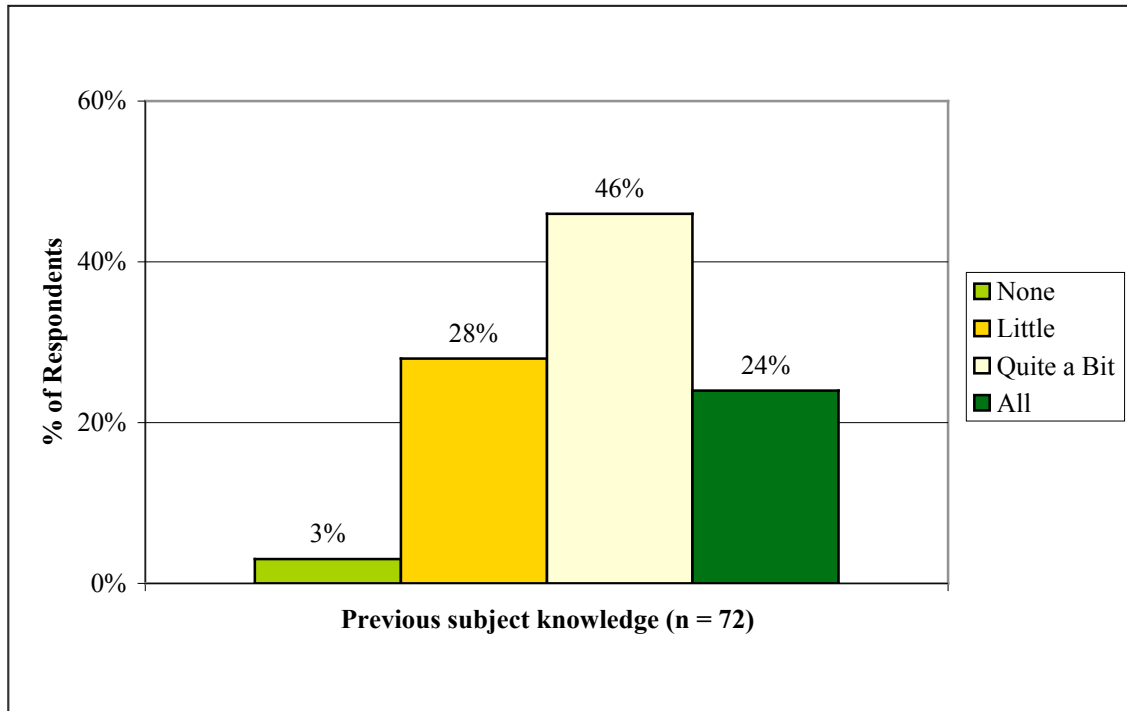
Source: Analysis of Teacher Participant Surveys

As shown in Figure 4, a majority (70%) of the respondents indicated that they knew "quite a bit" or "all" of the general subject matter covered, while 30% reported having "little" or no prior knowledge.

Figure 5 shows teacher responses to a series of questions that asked their opinions about different aspects of the training they attended. Specific aspects included: the suitability of the training to respondents' experience level, whether they thought attending the PD was "worth their time," whether it "made them think," how much they expected to use what they had learned, and whether they would recommend the training to others.

Figure 5. Teacher Opinions About the Trainings
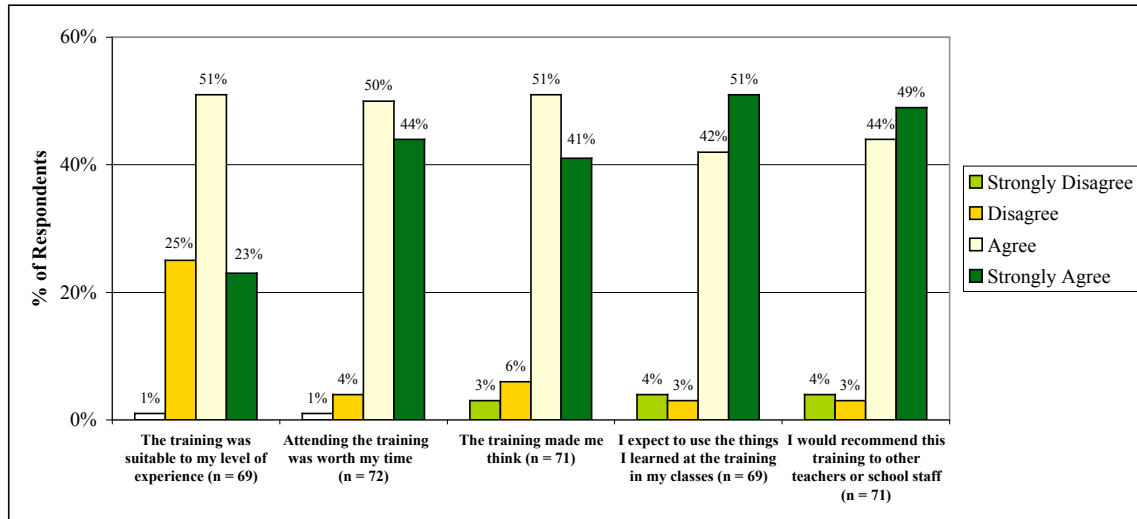
Source: Analysis of Teacher Participant Surveys

Responses to these questions reflected positively on the six PD programs, with a majority of teachers "agreeing" or "strongly agreeing" with each of the statements provided. There was less support for the idea that trainings had been suitable for respondents' levels of experience. Given the relatively high percentage of teachers who said they had prior knowledge of teaching strategies and the subject matter presented at the trainings (see Figures 3 and 4 above), it can probably be assumed that most of the respondents who did not find the trainings a good match in this category felt that the training content was beneath their experience levels.

Teacher Perceptions of Training Outcomes. A final survey item asked participants whether they thought the training would improve their teaching practice and/or result in improved student achievement. Respondents were asked their expectations about these potential outcomes (i.e., rather than whether they had actually occurred), since some of them had participated in trainings during the summer and had not yet had the opportunity to judge specific classroom outcomes. Figure 6 displays the data from these two questions.

Figure 6. Expected Teacher and Student Outcomes of the Trainings
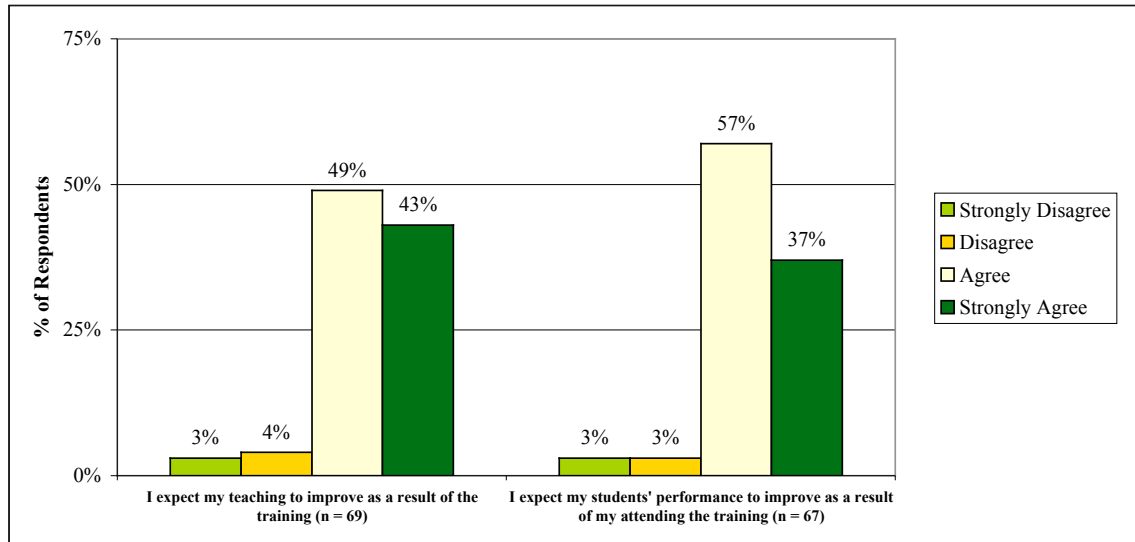
Source: Analysis of Teacher Participant Surveys

Nearly all of the surveyed teachers anticipated positive outcomes, stating agreement or strong agreement that the trainings would result in improvements in their teaching practice and in their students' performance.

Summary of Findings. Overall, feedback from teachers who participated in the six PD trainings was very positive, confirming the generally positive reports written by the content experts who reviewed them. The biggest motivational factor involved in teachers' decisions to participate in the trainings was their content, although other factors appeared to be important for some respondents. The availability of a stipend for attending appeared to have no influence on the majority of attendees, but, as stated above, this could be because stipends were not offered for these particular trainings. The vast majority of respondents rated the trainings highly in terms of overall quality, and thought that they compared favorably with other PD in the same content areas. Survey responses indicated that some teachers thought that the content of the training they attended was not suitable for their experience level, but without additional information about screening procedures that might have been used to determine who should register for the PD when they were offered, it is impossible to offer further interpretation of these data. In general, the teachers who attended these trainings reported finding them useful and expected positive outcomes in their teaching practice and their students' performance as a result of having participated.

4. What are the factors related to the accessibility of high-quality PD programs across the state?

Professional development is being offered to Texas teachers from local and regional sources. An important issue is the degree to which the intended recipients of these trainings actually have access to these training opportunities. To answer this question, the evaluation team relied on data collected from the Teacher Access Survey, which was designed to collect data on teachers' perceptions and preferences about local and regional PD offerings. As described earlier, the sampling strategy used for the Teacher Access Survey was designed to include teachers from both high- and low-performing districts (based upon student achievement scores) for comparative analysis. Efforts were also made to ensure that respondents in both large and small districts were included.

The following discussion begins with a focus on the number of hours teachers spent in staff development during the 2005–2006 school year followed by an examination of factors that influenced decisions to attend PD programs and preferences about training format and scheduling.

Number of hours of professional development. Teachers were asked to report the number of hours they had spent in PD during the 2005–2006 school year, and six response categories were provided. Table 16 reports this information for all survey respondents.

Table 16. Hours of Professional Staff Development Attended During 2005-2006

	Reported Hours of PD					
	0	**1-9**	**10-19**	**20-39**	**40-59**	**60 plus**
Overall	0.6%	7.0%	21.0%	35.4%	23.1%	12.9%
Low Performing	0.8%	6.4%	17.6%	30.0%	28.3%	16.8%
High Performing	0.5%	7.3%	23.6%	38.7%	19.4%	10.5%
Smaller District	0.6%	8.5%	21.6%	35.8%	23.8%	9.7%
Larger District	0.7%	3.7%	19.6%	34.5%	21.3%	20.3%

Source: Analysis of Teacher Access Surveys (total N = 965)

The greatest percentage of teachers reported receiving 20 to 39 hours of PD during the 2005-06 school year. Interestingly, very low percentages of teachers reported zero (0.6%) or 1-9 hours (7.0%) of PD attendance. This indicates that the overwhelming majority of responding teachers participated in at least one day (i.e., more than 9 hours) of PD over the past year.

Teachers from larger districts were more likely to be represented in the 60 hours plus range (20.3%) compared to smaller districts (9.7%). Interestingly, a higher percentage of teachers from low performing districts reported participating in more than 40 hours of PD (45.1%) than teachers from high performing districts (29.9%). This finding suggests that teachers in low-performing schools have equal or greater opportunities to attend PD in the state. This may also be a reflection of the greater number of required PD hours for

teachers at these campuses, as many grants and education initiatives implemented at low-performing schools require or include PD as part of their reform efforts.

Table 17 displays the distribution of reported PD hours within each category of number of years teaching experience. This table clearly shows the majority of teachers, within every bracket of experience, attended 20-39 hours of PD during the 2005-2006 school year.

Table 17. Teacher Experience and Hours of Professional Development

Years Taught	Reported Hours of PD					Total
	1–9	10–19	20–39	40–59	60 plus	
2–4	5.6%	15.9%	37.4%	24.3%	16.8%	100%
5–9	10.1%	18.5%	37.6%	19.1%	14.6%	100%
10–20	7.7%	20.6%	35.0%	25.8%	10.9%	100%
21 or more	4.3%	26.0%	35.0%	22.3%	12.3%	100%

Source: Analysis of Teacher Access Surveys (total n = 934)
Note. Low incidence 0–1 years taught crossed with 0 hours of PD not included.

A somewhat higher percentage of teachers with 2 to 4 years of experience reported greater than 40 hours of PD (41.1% versus 33.7%, 36.7%, and 34.6% for 5 to 9 years, 10-20 years, and 21 or more years of experience, respectively). The overall pattern shown in this table, however, reveals that years of teaching experience appears to have little impact on the number of hours of PD that teachers attended in 2005-2006.

Table 18 compares the distribution of PD hours based on teacher education level. Among teachers with a bachelor's degree, 8.2% reported 1 to 9 hours of PD as compared to 4% of teachers with an advanced degree. Also, a higher percentage of teachers with an advanced degree report attending 60 or more hours of PD (17.2%) than teachers with Bachelors Degrees (11.3%).

Table 18. Teacher Education Level and Hours of Professional Development

Highest Degree Held	Reported Hours					Total
	1–9	10–19	20–39	40–59	60 plus	
Bachelors	8.2%	20.3%	36.4%	23.8%	11.3%	100%
Advanced	4.0%	23.4%	33.3%	22.0%	17.2%	100%

Source: Analysis of Teacher Access Surveys (total n = 954)
Note. Low incidence high school and associate's degree crossed with 0 hours of PD not included.

To determine the most common sources of local and regional PD, survey respondents were asked to identify the provider of the PD they attended. Table 19 contains information for all respondents as well as a breakdown by district size.

Table 19. Source of Professional Development

Source	Overall	Smaller Districts	Larger Districts
Local School District	98.6%	98.4%	99.0%
Regional ESC	72.9%	80.7%	53.6%
University	26.6%	25.1%	29.9%
Private Provider	50.5%	49.8%	52.1%
Other	32.3%	31.2%	35.0%

Source: Analysis of Teacher Access Surveys (total n = 993)
Note: The percentages in this table represent a duplicated count because respondents could indicate more than one source for professional development.

The findings reflected in Table 19 show that a larger percentage of teachers from smaller districts (80.7%) reported using the ESC as a source for PD training than those from larger districts (53.6%). This makes intuitive sense, given that larger districts are more likely to be able to support in-house PD programs. Other categories of service providers were unremarkable in terms of differences between smaller and larger districts. In addition, there were no apparent differences between the reported providers for lower and higher performing districts.

In general, these data show that there are more teachers with advanced degrees in larger and higher performing districts. In addition, teachers with advanced degrees are more likely to report higher numbers of hours in PD participation.

Factors in Deciding to Attend Professional Development

To determine what factors influence a teacher's decisions to attend professional development, respondents were asked to rate the degree of influence that a particular factor had on their decision to send teachers to or attend *ESC* trainings or *local* district trainings. Influential factors included monetary (stipend), logistical (time of year or location) and professional (district or state PD requirements). Table 20 shows the level of influence assigned to each of the listed factors in respondent's decisions to attend local (i.e., district) and regional (i.e., ESC) provided trainings.

Table 20. Degree of Influence on Teachers' Decisions to Attend Local and Regional PD Trainings

Influence	Level of Influence				Mean Rating District Size	
	None	**Little**	**Some**	**Strong**	**Smaller**	**Larger**
Stipend						
Local	31.8%	18.5%	24.0%	25.7%	2.34	2.66
Regional	31.7%	18.8%	23.9%	25.6%	2.33	2.66
Principal						
Local	7.2%	12.0%	36.1%	44.8%	3.23	3.09
Regional	7.1%	12.0%	36.0%	44.9%	3.23	3.09
Content						
Local	2.0%	1.6%	12.7%	83.7%	3.79	3.75
Regional	2.0%	1.6%	12.6%	83.8%	3.78	3.30
Location						
Local	8.1%	11.6%	40.6%	39.7%	3.13	3.10
Regional	8.1%	11.7%	40.3%	39.8%	3.12	3.11
Length						
Local	9.9%	16.3%	46.2%	27.5%	2.89	2.98
Regional	9.9%	16.3%	46.1%	27.7%	2.89	2.98
Time of Year						
Local	12.1%	17.8%	39.7%	30.4%	2.89	2.89
Regional	12.2%	17.9%	39.6%	30.4%	2.88	2.89
Sponsor						
Local	16.7%	27.6%	37.3%	18.4%	2.58	2.56
Regional	16.8%	27.4%	37.3%	18.5%	2.58	2.57
Requirement						
Local	7.5%	12.1%	29.3%	51.1%	3.22	3.28
Regional	7.6%	12.0%	29.2%	51.2%	3.23	3.27
Recommendation						
Local	8.6%	18.5%	45.7%	27.2%	2.88	3.00
Regional	8.6%	18.8%	45.5%	27.1%	2.87	3.00

Source: Analysis of Teacher Access Surveys (total N = 968)

Responses were nearly identical for both local and regional trainings. The most influential factor for teacher attending PD was the content of the training, with almost 84% of teachers rating it as a *strong* influence for attending both regional and local trainings. Somewhat surprisingly, the availability of a stipend was heavily weighted toward *none* or *little* influence, with about 50% of teachers providing one of these ratings. Comparing the average rating of each factor (based on a scale *none* = 1 to *strong* = 4) for teachers in small and large districts showed that the availability of a stipend was slightly more influential for teachers in the larger districts than those in smaller districts (2.66 versus 2.33 respectively). On the other hand, the principal was rated as a higher level of influence in the smaller districts (3.23 compared to 3.09 in the larger districts). Finally, comparisons between respondents from lower and higher performing districts revealed no difference in overall response patterns on each of the factors.

Online Training and Distance Learning

In order to further understand teacher perceptions regarding access to high-quality PD In order to further understand teacher perceptions regarding access to high quality PD programs, survey respondents were also asked to report on their use of online training and distance learning programs for professional development. Overall, only 17% of responding teachers had participated in PD via online or distance learning. As indicated in Table 21, a higher percentage of teachers from the lower performing districts had taken trainings delivered online or through distance learning technologies, but there was little difference by district size.

Table 21. Percentage of Teachers Participating in Online Training or Distance Learning: District Characteristics

District Performance		District Size	
Lower	Higher	Smaller	Larger
20.8%	14.6%	16.8%	18.5%

Source: Analysis of Teacher Access Surveys (total N = 981)

Though only a small percentage of teachers engaged in online or distance training, Table 22 shows that of those who participated, a higher percentage were more experienced, and were minorities, though both of these differences were quite small. A larger difference existed based upon level of degree held, with a higher percentage of those teachers participating in online or distance training holding advanced degrees (24.2%) than Bachelor's degrees (14.6%).

Table 22. Percentage of Teachers Participating in Online or Distance Training: Teacher Characteristics

Experience		Degree		Ethnicity	
< 5 years	5 years plus	Bachelor's	Advanced	Minority	White
14.9%	17.7%	14.6%	24.2%	19.3%	16.3%

Source: Analysis of Teacher Access Surveys (total N = 981)

Given the small numbers of teachers participating in online or distance learning, it was particularly interesting to assess what factors influenced their decision to access this type of PD. Table 23 presents these responses.

Table 23. Factors Influencing Participation in Online or Distance Training

	No Influence	A Little Influence	Some Influence	Strong Influence
Accessibility	19.7%	15.3%	33.6%	31.4%
Self-Paced Nature	17.7%	12.9%	33.0%	36.4%
Flexible Schedule	15.7%	9.6%	25.8%	48.9%

Source: Analysis of Teacher Access Surveys (total N = 417)

A large percent of respondents (49%) indicated that the convenience of having a flexible schedule had a *strong* influence on their decision. Approximately one-third of the teacher

respondents indicated that the self-paced nature (36.4%) and accessibility of the courses (31.4%) had a *strong* influence on their decision to participate. Comparisons of mean ratings for teachers in small and large districts showed that only a slightly higher percentage of teachers in the smaller districts (where accessibility to courses might be expected to be an issue) indicated that accessibility was a *strong* influence.

PD Time and Format

An important aspect of understanding teacher engagement in PD is to determine teacher preferences (in terms of time and format), so that PD programs can be designed and structured in ways that encourage participation. Thus, survey respondents were asked to rank order their preferences regarding PD scheduling and training formats with most preferred given a rank of 1.

Best time for workshops. In-service trainings during the school year were ranked most preferred by teachers with a rank average of 1.5 and 62.5% of the respondents identifying it as their number one choice for training time. This was followed by summer workshops (average rank of 2) and online trainings (average rank of 2.7). It was interesting for online trainings to appear as the third most preferable choice, as earlier results showed a small percentage of teachers actually participating in online PD. Comparisons between teachers in lower or higher performing districts or from smaller or larger districts found no differences between responses.

Best format for PD training. Teachers were also asked to rank-order their preferences for the best format of PD. The results are shown in Table 24.

Table 24. Rank-Order Preference for Training Format

Format	Average Rank Order	Percent of #1 Rank	Modal Rank
1 day workshop	1.2	65.4	1st
2–3 day workshop	2.71	9.0	3rd
4+ day workshop	4.19	1.4	4th
Professional conference	2.73	19.8	2nd
Online course	3.96	5.8	5th
Other	5.3	5.9	6th

Source: Analysis of Teacher Access Surveys (total N = 988)
Note. Percents will not add up to 100 given different number of respondents to each format option.

One-day workshops were ranked the most preferred format for PD with 65% of the respondents identifying it as their number one choice for training format. This was followed by professional conferences (19.8%) and 2 to 3 day workshops (9.0%). Workshops lasting four or more days and online courses were the least preferred PD formats. In each case, however, approximately 6% of teachers ranked these two choices as number one.

Improved accessibility. The survey asked respondents to identify the single factor that would most improve their access to high-quality PD. This question was asked in an open-ended format, and responses were coded and grouped into general factor categories. A

total of 745 teachers offered responses, although their answers often identified more than one factor as being important to improving access.

The most frequently mentioned factor (identified by 31% of respondents) was to make changes in the content of PD offered. About a third of those suggesting content improvements focused on making trainings more specific to subject areas (e.g., mathematics, special education, ESL, or art) or to grade levels. Many of these respondents stated that the PD they usually participated in was not useful because it was too generic, rather than being tailored to their specific teaching needs. Others wanted more variety in the content of PD offered or trainings that were more directly applicable to their classroom practice.

The second most frequently mentioned factor that would improve access to PD (identified by 21% of respondents) was increased monetary support (e.g., stipends paid directly to teachers for attending trainings or more district funding available to pay fees, travel costs, and other expenses incurred in attending trainings). This strong emphasis on stipends and increased funding appears to contradict earlier survey findings in which teachers identified the availability of stipends as being the least most important factor in their decisions to attend specific trainings. This seeming contradiction can be explained, however, by examining the wording of the questions asked. The earlier question asked respondents how important stipends were in influencing their actual (i.e., past) decisions to attend regional and local PD. One might assume that stipends were not rated as important in this question because they were not an available option. If, on the other hand, the question is left open and teachers are free to identify important factors in an "ideal" situation, stipends or other monetary support might logically be considered a more significant factor. In other words, these data indicate that offering stipends is an important factor in teachers' decisions to participate.

Three additional factors that were mentioned by respondents as most important in improving accessibility to PD fell into the more logistical categories of time, scheduling, and location (about 35% mentioned either one or a combination of these factors). When included, the time issue was generally that there simply was not enough time available in teachers' busy schedules for PD participation. Scheduling and location factors were closely related to this lack of time (e.g., if trainings were located closer to a teacher's district and/or at more convenient times, then he or she would have more opportunities to participate in them). The issue of location appeared to be a particular problem for teachers whose districts were not near a large urban area, where more trainings are generally offered (e.g., some gave examples of having to drive for 1 – 3 hours to get to a training site).

Other factors mentioned by teachers (although less than 10%) responding to this question included:
- Higher quality trainers/presenters
- Better information about what trainings were available
- Greater availability of online PD (and the technology to access it)
- More teacher input into the types of PD they needed

- Availability of more substitute teachers to take their classes when trainings were held during the school day

On the issue of substitute teachers, some respondents explained that either they had to find and pay for their own substitutes or that they had to spend so much time preparing materials for substitutes that it wasn't worth missing class to attend PD sessions.

Summary of Findings on Teacher Access to PD

Analysis of hours reported by teachers who completed the Teacher Access Survey indicates that the greatest percentage of teachers reported having spent between 20 and 39 hours (the equivalent of approximately 2 to 5 full days) in PD trainings during the 2005-2006 school year. In addition, very low percentages of teachers reported zero (0.6%) or 1-9 hours (7.0%) of PD attendance. Also noteworthy was the finding that teachers in the lower performing districts were more likely to report higher levels of participation (40 to 60 plus hours) than those from the higher performing districts. This finding suggests that PD opportunities are being made available to teachers at both the high and low performing districts. While some variations were noted, differences in the amount of PD teachers attended did not appear to be greatly influenced by teaching experience or education level.

Although teachers from smaller districts were more likely to use regional ESC offices as a source for PD, there was virtually no difference in factors influencing decisions to participate in local vs. regional PD trainings. The most consistently important factor in determining which available PD teachers actually attend was the content of the training. When respondents were asked to identify potentially important factors on their own, stipends and other forms of monetary support ranked as the second most important factor for them. Other issues mentioned by teachers as being important in increasing their access to PD included time, scheduling, and location factors.

In general, respondents' preferred scheduling for trainings was on in-service days during the school year. Summer workshops were ranked as their second choice. In regard to PD format, the first choice of responding teachers was 1-day workshops, followed by professional conferences, 2-3 day workshops, and then trainings that were 4 or more days in length. Online and distance learning PD offerings were the least preferred by teachers, although a fair number of the respondents had participated in PD formatted in this way. For those teachers who had, the flexibility of online and distance learning trainings was what made them the most attractive.

5. What key characteristics and practices are present in promising PD programs in the state?

The six profiles of high-quality regional PD programs presented in the previous section highlight the characteristics, strengths, and weaknesses of each individual program provided in the expert review reports. Using data from these program reports as well as information provided by the reviewers during a group discussion, this section presents a cross-program analysis that focuses on themes across the individual PD trainings. Noted strategies aligned with content-area research are presented first, followed by more general promising practices for all high-quality PD.

Specific Content-Related Strategies in High-Quality Professional Development

The following strategies were identified by the expert reviewers as being aligned with research in their specialty areas of reading, mathematics, and science. Each of these strategies was used in one or both of the two PD programs examined by each reviewer.

Reading

- Word instruction that emphasizes multiple contexts of use

In vocabulary instruction, there is a need to provide multiple contexts for specific words to expand and reinforce understanding. For example, students begin to "own" a new word by using it in sentences that they construct. This approach enables them to give the word a more personalized meaning, which reinforces learning.

- A strong focus on morphemic analysis

Morphemic analysis (i.e., teaching word prefixes and roots) is increasingly important as a tool for reading instruction as students reach higher grades.

- Use of "think alouds" in comprehension training

The strategy of using "think alouds" to increase comprehension helps students move from confusion to clarity when examining a particular text. They work through the problem text together by talking out loud about the process they use to figure out what the author is saying. The process is useful as a part of question generating and answering and may be used in conjunction with other strategies.

- Providing selected resources (e.g., handouts) in multiple languages

When training resources such as handouts are provided in multiple languages (e.g., Spanish and English), it is helpful to both teachers and students whose first language is not English. This is an especially useful strategy in trainings designed to help struggling readers, who are often English language learners.

Mathematics

- Use of manipulatives

Using manipulatives to bridge from concrete applications to conceptual understanding is a research-based strategy for mathematics PD. Teachers are guided in activities that they can replicate in their classrooms. The use of manipulatives is especially important in the lower grades.

- Using current, research-based approaches to teaching topical areas

Recent research in mathematics instruction has identified new approaches that provide alternative representations in some key areas, such as teaching addition and subtraction (e.g., replacing the more traditional "take away" approach with the "part/part/whole" approach). Multiple representations and the use of several models helps build stronger mathematical thinking skills.

- Use of student journaling

Students hone their mathematics thinking skills through talking and writing about what they are learning. Having students journal about the learning process is one way to employ this strategy.

- A focus on student use of "regularities"

The strategy of using "regularities" is an alternative to memorization in helping students develop fact understanding. This approach is based on the idea that when students learn new things based on things they already know, it improves learning and problem solving skills.

- Emphasizing more in-depth understanding of fewer concepts

Research in mathematics instruction suggests that "less is more." In other words, it is better to present a few activities that push students to a more in-depth understanding than to introduce too many concepts or activities too quickly.

Science

- Use of current scientific content information

The use of specific information and examples from contemporary science knowledge is a good strategy for engaging students and reinforcing science learning.

- Use of the 5 Es model

Research supports the use of the 5 Es model (Engage, Explore, Explain, Elaborate, and Evaluate) as a good approach for embedding the scientific method in instructional materials. It provides a way to keep students consistently focused on the methods of science and takes them to a higher level of thinking.

- Consistently putting training information in a classroom context

PD trainings in science often focus on particular scientific facts and knowledge, but research indicates that this information needs to be constantly related back to activities in the classroom and an understanding of how students learn.

Promising Practices in High-Quality Professional Development

The analysis and review of regional PD programs undertaken in this study makes it possible to identify several promising practices for high-quality PD. The following promising practices were utilized in some or all of the trainings that were examined by the expert reviewers for this report, and specific examples from these programs are noted below. However, on a broader level, these features typify good PD practice more generally across content areas.

1) Grounding training materials in current research in the areas of PD design and implementation, area content, and teaching pedagogy

To varying degrees, all of the PD programs reviewed were aligned with research in these three areas. The Secondary Struggling Readers PD and the TEXTEAMS Biology Institute were very much in line with research on high-quality PD design and implementation. The TEXTEAMS training for middle school teachers on proportionality was especially notable in the area of teaching pedagogy; the participants in this PD were consistently engaged in adult learning that reflects the way they can later present the materials in their own classrooms. Both of the science PD programs reviewed were very well grounded in content area research, but this was especially apparent in the TEXTEAMS Biology Institute, which included sections on the specific topics of genetics and biological evolution. Ideally, PD materials are not only aligned with current research, but also provide citations for specific sources (e.g., articles, books, Web sites) to encourage participants' continuous learning.

2) Making direct and explicit connections between training activities and state standards

It was a strength of all of the PD reviewed that they provided direct links between the content presented and the applicable TEKS. The Elementary Reading Institute, which was designed to address four TEKS in grades 3–6, provided a detailed discussion of TEKS in each topical section. The Light and Optics PD was also specifically focused on the TEKS; materials explained each of the targeted TEKS in depth, including the linguistics behind the standards, what they actually look like when working with students, and how they are assessed with TAKS. Both of the TEXTEAMS trainings were also designed to align content information with applicable TEKS.

3) Discussion of all instructional strategies and activities includes a rationale and an examination of context for use, with a constant relating of ideas back to classroom practice

This practice reflects what one reviewer called addressing the "who, when, why, and how" (and not just the "what") of instructional activities as they are presented. All of the reviewed PD included some contextual information to link training content to classroom practice, but this was done especially well in both of the science PD and in the Elementary Reading and Mathematics Institutes, which provided a wealth of good specific lesson plan ideas and explanations.

4) Using the strategy of going from "big ideas" to specific illustrative activities

This practice combines the presentation of content-area information (which may include theoretical ideas) with very practical classroom-based applications. A good use of this approach is in the TEXTEAMS Biology Institute, which presents a limited number of "big" ideas and then moves to specific tasks and assignments (such as hands-on activities, reflection, and modeling) that address them. The Secondary Struggling Readers training also makes very explicit connections between more theoretical ideas and specific strategies for how to use them in the classroom.

5) Focusing on more in-depth knowledge of a few concepts

Within a single PD training, there are advantages to narrowing the scope of the materials presented to support the development of more in-depth knowledge, rather than providing a little bit of information on too many topics. Good examples of PD programs that utilized this approach include the Secondary Struggling Readers training, which focuses on teaching reading to learners with specific needs such as ESL and dyslexia, and the TEXTEAMS Middle School PD, which focuses on the single "big idea" of developing proportional reasoning at a deeper level.

6) Using ongoing assessment to monitor progress and growth throughout the training to reinforce learning

This practice is specifically concerned with using assessment techniques throughout the learning process rather than just measuring outcomes at some end point. This can be modeled during a training to reinforce teachers' understanding of how to use various assessment strategies along the way. For instance, the Secondary Struggling Readers PD provides numerous ideas for continual monitoring of student progress, especially in the areas of fluency and word identification.

7) Inclusion of time for individual and group work to reflect and collaborate

Designating a certain amount of time during a training for participants to reflect and learn collaboratively reinforces the learning process in a way that exclusively lecture presentations do not. Having this component included in the structure of a PD also

provides the chance to model this approach for use later in the classroom. Both of the TEXTEAMS PD programs (on biology and proportionality) allot specific periods of time for participants to reflect and discuss the ideas presented on each training day.

8) Designing materials that work for participating teachers at different levels

Even when participants have similar backgrounds and knowledge in a content area, they may have varying degrees of experience in the classroom. Unless a training is specified for teachers at only one level, it needs to accommodate different experience and skill levels. This was accomplished well in the elementary-level Light and Optics PD, which is relevant for both novice and experienced teachers. For instance, a novice teacher might focus on understanding the applicable TEKS discussed, while a more experienced teacher might focus on connecting the materials to other disciplines or on practicing the 5Es model.

SUMMARY AND FUTURE RESEARCH

The evaluation report submitted to TEA by the Gibson Consulting Group in 2004 found that the PD that was provided at the state level through the Texas SSI (the Teacher Reading and Mathematics Academies) was of high quality and reflected most of the standards for effective staff development defined by the NSDC. The present study was designed to help identify similar high-quality PD trainings currently being offered at the local and regional levels throughout the state. Specifically, the requirements for this evaluation were to: 1) review the implementation of educator PD programs in reading, mathematics, and science at the local and regional levels, and 2) identify the characteristics and best practices of these programs.

High-quality PD programs being offered at the local (i.e., district) level were identified by district administrators in 10 of Texas' 20 ESC regions. While this study was not intended to review or evaluate specific local PD in-depth, it did find that there are hundreds of trainings being offered to teachers through school districts across the state. There were specific PD trainings in all three major content areas (reading, mathematics, and science) as well as others focused on specialized topics. The most frequently mentioned trainings had content focused on: developing writing skills, specific reading, mathematics, and science curriculums, whole school reform, Texas state standards (TEKS) and TAKS, and reaching special groups within the student population (e.g., students in poverty and English language learners). There was also a diversity of training types reported from a large variety of providers and vendors. In short, Texas teachers appear to be receiving a great deal of PD at the local level that focuses on the major content areas of reading, mathematics, and science, and that district administrators feel is of high quality.

A major component of this study was to identify and review the content and delivery of specific high-quality PD currently being offered at the regional level (i.e., through ESC offices). Using a selection process that involved defined criteria and input from both ESC personnel and district administrators, the list of possible trainings to examine was narrowed down to six. The final list of regional programs included one elementary and one secondary level training in each of the three content areas of reading, mathematics, and science. Training materials for these six trainings were submitted to content experts for review and input was requested from teachers who had participated in each of the trainings during the 2005–2006 school year.

The experts who reviewed the content of these PD programs found that they were grounded in current research in each of the three content areas and that they incorporated more general research-based instructional strategies. They also concluded that the trainings met many of the national standards for good staff development defined by the NSDC and other discipline-specific organizations. All of the trainings were aligned with TEKS and incorporated strategies to improve student performance through direct applications to classroom practice. In general, weaknesses identified in the training materials had to do with the ongoing need for updating specific content, rather than any major flaws in overall approach or design.

Training participants confirmed that these six programs were of high quality and that they equaled or surpassed other trainings they had attended in the same content area. The vast majority of teachers who provided feedback also expected that their participation in these PD offerings would result in improvements in both their teaching practice and their students' performance. Overall, the conclusion reached after investigating these programs from a variety of perspectives was that they represented high-quality PD at the regional level and that they incorporated a number of promising practices and characteristics in both content areas and delivery strategies.

Another question explored in this evaluation focused on the issue of how accessible PD opportunities are to the teachers for whom they are intended. Data on this issue were collected from a large sample of teachers from districts in 10 ESC regions across the state. The highest percentage of teachers reported having spent between 2 and 5 full days in PD trainings during the 2005-2006 school year. In addition, teachers in the lower performing districts were more likely to report higher levels of participation (40 to 60 plus hours) than those from the higher performing districts. This finding indicates that teachers in lower-performing schools have equal or greater access to PD opportunities throughout the state, and may reflect a greater number of required PD hours by teachers in low performing districts While some variations were noted, differences in the amount of PD teachers attended did not appear to be greatly influenced by teaching experience or education level.

The most consistently important factor influencing teachers' decisions about what PD to attend was the content of the training. Other important factors included the availability of stipends, and time, scheduling, and location of the training. Results showed that teachers prefer 1-day workshops, although they are involved in trainings with alternative formats including online and distance learning. In general, the findings on teacher access to PD indicate that teachers from all areas of the state and from various district sizes and performance levels do have access to trainings to improve their classroom practice.

The content area experts who contributed to this study identified a number of characteristics and promising practices in the PD programs they reviewed. These included: characteristics of the training material content (e.g., grounding in current research, alignment with state standards, designs that accommodate different levels of teaching experience, and the inclusion of instructional strategies and activities that are consistently related back to classroom practice); specific teaching techniques to improve learning (e.g., moving from "big ideas" to specific illustrative activities and focusing on more in-depth knowledge of a few important concepts); and delivery strategies to reinforce learning as it occurs (e.g., ongoing assessment to monitor progress and inclusion of time for participants to reflect and do collaborative work).

This study provides evidence that quality PD opportunities are currently being offered at the local and regional levels to educators in Texas, and that teachers in a variety of settings have access to these opportunities. Overall knowledge about PD in the state, however, could be increased through further research. Additional work in three specific

areas could provide valuable insights and provide a more complete picture. First, research that is designed to replicate for local level PD what was accomplished here with regional level trainings. This would involve establishing criteria and identifying high-quality PD that is being offered by districts around the state, subjecting a sample of these programs to expert review, and surveying participants to get feedback on their experience with specific trainings. Second, it would be useful to better understand what motivates teachers to take advantage of the PD training opportunities that are available to them. This study collected some feedback from teachers about their preferences for PD training time and format as well as factors that influence their decisions to attend specific trainings. More could be learned about how teachers view PD requirements and experiences through surveys and/or interviews with a sample of teachers across the state. A final area for future research would be to focus specifically on outcomes of the trainings being offered. This might involve following up with PD participants and more closely examining their post-training classroom practice using qualitative approaches such as observations and interviews. In a longer-term study, it might also be possible to relate changes in classroom practice to student performance.

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APPENDIXES

A. Surveys
B. Local PD List
C. Expert Review Guidelines and Criteria
D. Expert Review Reports

Texas Education Agency
Local and Regional Professional Development Administrator Survey

Thank you for taking the time to complete this survey. Your input on the accessibility and quality of local and regional Professional Development (PD) programs provided to teachers in your district is valuable and appreciated.

> For the purpose of this survey*, Regional* PD refers to trainings provided by regional Education Service Centers (ESCs). *Local* PD may include trainings provided by your district and/or trainings used by your district from other PD providers such as universities and commercial vendors.

Section 1: Administrator Demographics

Please mark the one category that best describes your primary position:

- ○ Superintendent
- ○ Director, Staff Development
- ○ Director, Personnel
- ○ Director, Curriculum & Instruction
- ○ Other: please specify _____

Section 2: Access to Regional (ESC) and Local (District Implemented) PD

1. Among the teachers in your district who attended PD trainings in the 2005-2006 school year (including Summer, 2005), approximately what percentage went to:

a. Regional ESC Trainings

0 – 25%	26 – 50%	51 – 75%	76 – 100%
○	○	○	○

b. Local District Implemented Trainings

0 – 25%	26 – 50%	51 – 75%	76 – 100%
○	○	○	○

2. In general, to what extent do the following factors influence decisions to make specific professional development trainings available to teachers in your district? (Please fill in one circle per line for ESC trainings and one circle per line for local trainings.)

	Regional (ESC) PD				Local (District Implemented) PD			
	No Influence	A Little Influence	Moderate Influence	Strong Influence	No Influence	A Little Influence	Moderate Influence	Strong Influence
a. Availability of stipend for attending	○	○	○	○	○	○	○	○
b. Content of the training	○	○	○	○	○	○	○	○
c. Location of the training	○	○	○	○	○	○	○	○
d. Length of the training	○	○	○	○	○	○	○	○
e. Time of year available	○	○	○	○	○	○	○	○
f. The sponsor or trainer of the training	○	○	○	○	○	○	○	○
g. State or district PD requirements	○	○	○	○	○	○	○	○
h. Recommendations from others	○	○	○	○	○	○	○	○

Section 3: Identification of High Quality Local PD Trainings

The following question asks you to identify high quality, *locally implemented* PD used by your district during the 2005-06 school year (including Summer, 2005).

Locally implemented PD may include training provided by your district as well as training implemented by your district from universities and commercial vendors.

Locally implemented PD does NOT include training at events such as national and state conferences or regional ESCs. This type of PD should NOT be included in this section of the survey.

In the table below, please identify by name and vendor up to six local professional development that meet *all* of the following criteria:
- are viewed by you and others as positively influencing teaching practice and student achievement in your district
- involve at least 2 to 3 days of training
- consist of school-level specific training (i.e., elementary, middle, and secondary)
- are content-focused in reading, mathematics, and science

1. In the spaces below, please write the names and vendors of up to six local PD trainings that meet the above criteria and mark to the right all criteria that apply.

PD Name and Vendor	2-3+ days	school level			content focus		
		Elem	Middle	High	Read	Math	Science
Name: Vendor:	O	O	O	O	O	O	O
Name: Vendor:.	O	O	O	O	O	O	O
Name: Vendor:	O	O	O	O	O	O	O
Name: Vendor:	O	O	O	O	O	O	O
Name: Vendor:	O	O	O	O	O	O	O
Name: Vendor:	O	O	O	O	O	O	O

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Section 4: Administrator Ratings of Regional PD Trainings

1. **The following regional PD trainings have been offered in the past year by an ESC office in your area. Please indicate if you sent teachers in your district to attend any of these trainings during the 2005-06 school year (including Summer, 2005):**

(Did any teachers in your district attend?)

Effective Instruction for Struggling Readers (Grades K-5)   ○ Yes ○ No

1st – 4th Grade Teacher Reading Academies   ○ Yes ○ No

Bridging II TAKS: Light and Optics (Grades 5-8)   ○ Yes ○ No

> If you answered **"Yes"** to **any** of the above questions (i.e., you sent teachers in your district to any of these trainings in the past year), please continue to complete the remainder of this survey. If you answered **"No"** to **all** of these questions, please **STOP** here. Thank you!

The following groups of questions apply to each of the separate trainings listed above. Please answer the questions in each category **ONLY** for training programs in which teachers in your district have participated in the past year.

ESC Training: Effective Instruction for Struggling Readers (Grades K-5)

1. **How familiar are you with the content of the** *Effective Instruction for Struggling Readers (Grades K-5*) **training?**

Not at all Familiar	A little Familiar	Somewhat Familiar	Very Familiar
○	○	○	○

2. **Approximately what number or percentage of <u>eligible</u> (i.e., training was designed for their grade level and/or content area) teachers in your district attended the** *Effective Instruction for Struggling Readers (Grades K-5)* **training in the past year (including Summer, 2005)?**

Number Attended_____ Or estimate percentage ➞

0 – 25%	26 – 50%	51 – 75%	76 – 100%
○	○	○	○

3. **How likely do you think it is that your teachers' participation in the** *Effective Instruction for Struggling Readers (Grades K-5*) **training will positively influence their students' academic performance?**

Not at all likely	Unlikely	Likely	Very likely	Unsure
○	○	○	○	○

4. **How would you rate the overall quality of the** *Effective Instruction for Struggling Readers (Grades K-5*) **training?**

Very Poor	Poor	Good	Very Good	Unsure
○	○	○	○	○

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ESC Training: 1st – 4th Grade Teacher Reading Academies

1. How familiar are you with the content of the *1st – 4th Grade Teacher Reading Academies* training?

Not at all Familiar	A little Familiar	Somewhat Familiar	Very Familiar
○	○	○	○

2. Approximately what number or percentage of <u>eligible</u> (i.e., training was designed for their grade level and/or content area) teachers in your district attended the *1st – 4th Grade Teacher Reading Academies* training in the past year (including Summer, 2005)?

Number Attended_____ Or estimate percentage ➡

0 – 25%	26 – 50%	51 – 75%	76 – 100%
○	○	○	○

3. How likely do you think it is that your teachers' participation in the *1st – 4th Grade Teacher Reading Academies* training will positively influence their students' academic performance?

Not at all likely	Unlikely	Likely	Very likely	Unsure
○	○	○	○	○

4. How would you rate the overall quality of the *1st – 4th Grade Teacher Reading Academies* training?

Very Poor	Poor	Good	Very Good	Unsure
○	○	○	○	○

ESC Training: Bridging II TAKS: Light and Optics (Grades 5-8)

1. How familiar are you with the content of the *Bridging II TAKS: Light and Optics (Grades 5-8)* training?

Not at all Familiar	A little Familiar	Somewhat Familiar	Very Familiar
○	○	○	○

2. Approximately what number or percentage of <u>eligible</u> (i.e., training was designed for their grade level and/or content area) teachers in your district attended the *Bridging II TAKS: Light and Optics (Grades 5-8)* training in the past year (including Summer, 2005)?

Number Attended_____ Or estimate percentage ➡

0 – 25%	26 – 50%	51 – 75%	76 – 100%
○	○	○	○

3. How likely do you think it is that your teachers' participation in the *Bridging II TAKS: Light and Optics (Grades 5-8)* training will positively influence their students' academic performance?

Not at all likely	Unlikely	Likely	Very likely	Unsure
○	○	○	○	○

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4. How would you rate the overall quality of the *Bridging II TAKS: Light and Optics (Grades 5-8)* **training?**

Very Poor	Poor	Good	Very Good	Unsure
○	○	○	○	○

Thank you for your feedback. Please use the enclosed pre-paid envelope to return the completed survey to SEDL **no later than July 14, 2006**. If you have any additional comments you would like to make about professional development opportunities in your district, please write in the space above.

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Professional Development Teacher Participant Survey

Thank you for taking the time to complete this survey. When marking your responses, please fill in bubbles completely and keep your text responses within the lined boxes. Please make your marks like this ● and NOT like this: **x** √ **/.** You may use either a pen or a pencil. An online survey is available at [WEB ADDRESS]

Section 1: Teacher Demographic and Training Information

1. How many years have you taught prior to this school year? (Darken one oval)

- ○ 0-1 years
- ○ 2-4 years
- ○ 5-9 years
- ○ 10-20 years
- ○ 21 or more years

2. Please indicate the highest level of education you have attained: (Darken one oval)

- ○ High School Degree
- ○ Associate's Degree
- ○ Bachelor's Degree
- ○ Master's Degree
- ○ Doctorate

3. Ethnicity (Darken one or more)
- ○ Black or African American
- ○ Hispanic or Latino
- ○ White
- ○ Other

4. Approximately what **number of hours** did you spend in formal, inservice professional development **during the 2005-06 school year**? (Darken one oval)

- ○ 0   ○ 10-19   ○ 40-59
- ○ 1-9   ○ 20-39   ○ 60+

Section 2: [NAME] Training

Questions 5-13 refer to the [NAME] training that our records indicate you attended in the past year.

5. Did you attend the [NAME] training?
○ Yes   ○ No

> If YES, please continue to complete the remainder of the survey. If NO, please stop, you have finished the survey. Thank You!

6a. In addition to this training, have you attended other teacher trainings in [reading, math, science]?
○ Yes   ○ No

6b. If yes, how did this training compare?

Below Average   Average   Above Average
○   ○   ○

6c. If needed, please explain your rating in the space below:

7. Did you receive a stipend for participating in the [NAME] training?
○ Yes   ○ No

8. How would you rate the overall quality of this training?

Very Poor   Poor   Good   Very Good
○   ○   ○   ○

8a. If needed, please explain your rating in the space below:

9. How many of the teaching strategies discussed in this training did you already know when you attended?

None   A few   Most   All of them
○   ○   ○   ○

9a. If you answered "none," "a few," or "most," which new strategies did you learn? Please explain using the space below:

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1

Professional Development Teacher Participant Survey

10. How much of the subject matter covered in this training did you already know when you attended?

Nothing	A little	Quite a bit	All of it
O	O	O	O

10a. If you answered "nothing," "a little," or "quite a bit," which new subject matter did you learn? Please explain using the space below:

11. To what extent did the following influence your decision to attend the [NAME] training:

(Darken one oval on each line.)	No influence	A little influence	Some influence	Strong influence
a. Availability of a stipend for attending the training	O	O	O	O
b. My principal or other campus/district administrator	O	O	O	O
c. Content of the training	O	O	O	O
d. Location of the training	O	O	O	O
e. Length of training	O	O	O	O
f. Time of year	O	O	O	O
g. The sponsor or trainer of the training	O	O	O	O
h. State or district professional development requirements	O	O	O	O
i. Recommendations from others	O	O	O	O

12. Please provide your opinion about each of the following statements:

(Darken one oval on each line.)	Strongly Disagree	Disagree	Agree	Strongly Agree	No Opinion
a. The training was offered at a time of year that was convenient for me.	O	O	O	O	O
b. The training was suitable to my level of experience.	O	O	O	O	O
c. Attending the training was worth my time.	O	O	O	O	O
d. The training make me think.	O	O	O	O	O
e. I expect to use things I learned at the training in my classes during the upcoming school year.	O	O	O	O	O
f. I expect my teaching to improve as result of the training.	O	O	O	O	O
g. The training will help me to identify struggling learners.	O	O	O	O	O
h. I expect my students' performance to improve as a result of my attending the training.	O	O	O	O	O
i. I would recommend this training to other teachers or school staff.	O	O	O	O	O

13. If you have any additional comments about the [NAME] training, please write them in the space below. Thank you!

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2

Access to Professional Development Teacher Survey

Thank you for taking the time to complete this survey. When marking your responses, please fill in bubbles completely and keep your text responses within the lined boxes. Please make your marks like this ● and NOT like this: **x** √ **/.** You may use either a pen or a pencil. An online version of this survey is available at http://www.sedl.org/es/pd/access.cgi

Section 1: Teacher Demographic and Training Information

1. How many years have you taught prior to this school year? (Darken one oval)

- ○ 0-1 years
- ○ 2-4 years
- ○ 5-9 years
- ○ 10-20 years
- ○ 21 or more years

2. Please indicate the highest level of education you have attained: (Darken one oval)

- ○ High School Degree
- ○ Associate's Degree
- ○ Bachelor's Degree
- ○ Master's Degree
- ○ Doctorate

3. Ethnicity (Darken one or more)
- ○ Black or African American
- ○ Hispanic or Latino
- ○ White
- ○ Other

4. Approximately what **number of hours** did you spend in formal, inservice professional development **during the 2005-06 school year**? (Darken one oval)

- ○ 0   ○ 10-19   ○ 40-59
- ○ 1-9   ○ 20-39   ○ 60+

Section 2: Teacher Access to Staff Development

5. During the 2005-06 school year, did you participate in at least one staff development training offered by:
(Darken one oval on each line)

	Yes	No
a. Your local school district?	○	○
b. Your regional ESC office?	○	○
c. A university provider?	○	○
d. A private provider?	○	○
e. Other? Please specify: _____	○	○

6. To what extent do the following factors influence your decision to attend staff development trainings offered by **your regional ESC office**:

(Darken one oval on each line)	No influence	A little influence	Some influence	Strong influence
a. Availability of a stipend for attending the training	○	○	○	○
b. My principal or other campus/district administrator	○	○	○	○
c. Content of the training	○	○	○	○
d. Location of the training	○	○	○	○
e. Length of training	○	○	○	○
f. Time of year	○	○	○	○
g. The sponsor or trainer of the training	○	○	○	○
h. State or district professional development requirements	○	○	○	○
i. Recommendations from others	○	○	○	○

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Access to Professional Development Teacher Survey

7. To what extent do the following factors influence your decision to attend staff development trainings offered by **your local school district or other local providers**:

(Darken one oval on each line)

	No influence	A little influence	Some influence	Strong influence
a. Availability of a stipend for attending the training	O	O	O	O
b. My principal or other campus/district administrator	O	O	O	O
c. Content of the training	O	O	O	O
d. Location of the training	O	O	O	O
e. Length of training	O	O	O	O
f. Time of year	O	O	O	O
g. The sponsor or trainer of the training	O	O	O	O
h. State or district professional development requirements	O	O	O	O
i. Recommendations from others	O	O	O	O

8. During the 2005-06 school year, did you participate in any staff development training delivered through **online, distance learning technologies**?

    O Yes   O No

If yes,

9. To what extent do the following factors influence your decision to participate in **online trainings**:

(Darken one oval on each line)

	No influence	A little influence	Some influence	Strong influence
a. Accessibility through distance learning	O	O	O	O
b. Self-paced nature of training	O	O	O	O
c. Convenience of flexible schedule	O	O	O	O

10. What is the best time for you to attend staff development trainings/workshops?
(Please **rank order the options below** with 1 as your first choice, 2 as your second, and so on through 4.)

_____ in-service days during the school year

_____ summer workshops/trainings

_____ online on own time

_____ other (specify)_____

11. What is your preferred format for staff development trainings/workshops?
(Please **rank order the options below** with 1 as your first choice, 2 as your second, and so on through 6.)

_____ 1 day workshops/trainings

_____ 2-3 day workshops/trainings

_____ 4+ day workshops/trainings

_____ professional conferences

_____ online courses

_____ other (specify)_____

12. What one factor do you think would improve your access to high quality staff development?

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2

Appendix D

Local PD Trainings

TRAINING NAME	VENDOR
100 Book Challenge	American Reading Co.
1st Grade Overview	Local Staff
2nd Grade Overview	Local Staff
3.1c Name	3.1c Vendor
3.1d Name	3.1d Vendor
3.1e Name	3.1e Vendor
3rd grade Overview	Local Staff
5-E Model	District Math Coordinator
A Variety of Seminars for Math	Dr. Linda Griffith
A Variety of Seminars for Science	Laurie Westphal
A Variety of Seminars for TAKS	Dr. Shirley Crook
A Variety of Writing Seminars	Susie Flatae
A+ Learning	Bill Harry
A+ Software	American Education Corp.
Accelerated Math	Renaissance Learning
Accelerated Math	Renaissance Learning
Accelerated Reading	Renaissance Learning
Accelerated Schools	Accelerated Schools
Accelerated Vocabulary	Renaissance Learning
Action Learning Teams	Local
Agile Mind	Dana Center
Agile Mind	Dana Center
Agile Mind Math & Agile Mind Assess.	Dana Center & Agile Mind Education Holdings, Inc.
Aledo Writing Institute	Local
Alissa Elley	NISD Tech Director
AP - Laying the Foundation	College Board
AP - Laying the Foundations	AP Strategies
AP - Middle Sc Summer Institute Pre AP	College Board
AP CBL Training	AP Strategies Inc.
AP Training	AP Strategies
AP Training	AP Strategies
AP/Pre AP Summer Institutes	University of Texas - Pan American
AP/Pre AP Training	College Board
Ask-Me	
Attitudes Towards Differences	New Group, Inc
Balanced Literacy	
Barbara McCurdy	Montessori Instructor
Basic Language Skills	Scottish Rite Learning Center (Austin)
Beatrice Moore Luchin	Independent Consultant
Becky Pitzer	Consultant - Reading/LA
Behavior Strategies	Cindy Jones
Behavioral Management	Cade Reece
Benchmark Testing	SEDL
Bilingual/ESC Consortium	ESC 20

Bilingual/ESL	Lidia Morris, MED
Bilingual/ESL Training	IDRA (Intercultural Development Research Ass.)
Brain Based Learning	Eric Jensen
Brain Friendly Instruction	Local
Bridging to TAKS II	UTA, Dr. Judy Reinhartz
Bright Spots Educational	Candace Varnell
Calculator Training	BISD Curriculum
Calley Strengths	
Campus Instructional Leadership Team	David Ramirez
Capturing Kids' Hearts	The Flippen Group
Capturing Kids' Hearts	The Flippen Group
Caputring Kids' Hearts	The Flippen Group
Carbo Reading Styles	National Reading Styles
Carnegie Learning	Congitive Tutor
Champs (Classroom Management)	ESC 13
Character Education (Used Character Counts Material)	
Classroom Management	Love and Logic
Classroom Walkthrough Training	Dana Center U of Texas
CMP - Conceptual Math	Connected Math
Cognitive Coaching	Lupe Garza
Cognitively Guided Instruction	Promising Practices
Collaborative Learning	
Comprehensive School Reform	Accelerated Schools (Southwest)
Content Area Reading	Eva Duncan
Continuous Improvement	Jim Shipley
Cooperative Learning	
Cooperative Learning	Kagan
CPI Training	Houston County Special Ed Coop
Creating an Inclusive School	Richard Villa
Creative and Critical Thinking	ESC 6
Creative Minds	Martha Morales
Curriculum Alignment	Independent Contractor
Curriculum Alignment	Wall ISD - Admin.
Curriculum Alignment	Lorene Villarreal
Curriculum Cadres	United ISD
Curriculum Collaborative	ESC Service Centers
Curriculum Development	Queen City ISD
Curriculum Development	Dr. John Crain
Curriculum Development	Faye Whitlow
Curriculum Implementation of Connected Math	Connected Math
Curriculum Leadership	ESC 5
Curriculum Mapping	ILS (Illinois Learning Standards)
Curriculum Mapping	Heidi Jacobs
Curriculum Mapping	Karleen Noake
Curriculum Writing	James Steinhauser
Curriculum Writing	John Crain
Curriculum WTE	Timelives
D Training	ESC 6

Data Driven Decisions	Kilgo Consulting, Inc.
Daya Hill	Texas A&M - Texarkana
Debra McCrary	Dokalb ISD (Special Education)
Deep in the Heart	District
Depth and Complexity	Sandra Kaplan
Designing and Delivering Effective Instruction	Dr. Stackowskie
Developmental Reading Institute	Lamar Consolidated ISD
Diana Chancellor	Consultant - Mathematics
DIBELS	Special Ed SSA
DIBELS	Wireless Generation
DIBELS	DIBELS Data System
Differentiated Instruction	ISD
Differentiated Instruction	Quality Learning
Differentiated Instruction	Stetson and Associates
Differentiated Instruction	Cindy Jones
Differentiated Instruction	Varied
Differentiated Reading Instruction for Diverse Learning	DMR Educational Consultant - Dr. Ramirez
Disaggregation of Data and Curriculum Develop.	Locally Developed
Dist. Pans	Windthorst ISD
District 5th Grade Science	AIMS
Doni Scumaci	Scumaci Inc
Dr. A. N. Valledo	UTB
Dr. Barbara Caffee	Consultant - SS
Dr. Catherine Hinojosa	Texas Educ. Consult.
Dr. Courtney Crim	Texas Educ. Cons.
Dr. Diana Ramirez	DMR Education Consultants
Dr. Felipe Alanis	University of Texas at Austin
Dr. Jim Roberts	Regional Collaborative for Excellence in Science UNT
Dr. Joyce Carroll	New Jersey Writing Project
Dr. Keith Polette	UT El Paso
Dr. Mary Bull	Bull and Associates Educational Consultants
Dyslexia Training	Scottish Rite
E5L	District
Effective Benchmarking	ESC 20
Effective Schools Project	Tarleton State University
Elem. Science Training	District Trainers
Elementary Math Institute	ESC 6
Elementary Reading Institue	ESC 6
Eric Cupp Seminars	Eric Cupp
ESC 20 Content Development	ESC 20
ESC 20 Middle School Literacy	ESC 20
ESL Strategies	Kolack Group
ESL Training	Quality Learning
Esther Flores	Montessori Instructor
Eva Bisallion	SBISD
Everyday Math	Amy Driesbach
First Year Teacher Academy	GKT Consulting

Focus on Science	Eric Perkins
Forder and Ferrier	Forder and Ferrier
FOSS Science	FOSS
G and T - Exit Math Workshop	Texas ASCD
G/T	Kingston, Associates
G/T	District
G/T 30 Hour Training	District Personnel
G/T 6hr update	Dr. Joyce Juntune
G/T Training - 30Hrs	ESC 6
Gateways to Science	ESC 4
Gems Training	
Gifted and Talented Institute	Local
Gifted Talented 6 Hour updates	United ISD
Grace Stasny	Contractor
Grace Stasny Problem Solving	Grace Stasny
Great Books	Great Books, Inc
Guided Reading	Sue McAdams
Handwriting Without Tears	
Harcourt Reading First	Harcourt
Harcourt trophies/ARI	Local
Harriett Ball Math	
Heart of Texas Writing Project	
Herman Method For Reading Difficulties	Lexia
Herman Reading Method	ESC 16
High School and Middle School Science	Dr. Rey Ramirez - UT- Brownsville
High Schools That Work (HSTW)	Gay Burden
High Schools That Work (Literacy Across Curriculum)	Rickie Bruce
High Schools That Work (Science)	Larry Rainey
Higher Order Thinking and Questioning Strategies; Creativity; Differ in Math and Science	Laurie Westphal
Improving School Achievement	Accelerated Schools
Inclusion	Stetson and Associates
Inclusive Classrooms	Dr. Chris Kallstorm
Information Literacy	Sharon Van Tyne
INOVA	Dr. David Ramirez
INOVA	Dr. David Ramirez
INOVA	Dr. Ramirez
INOVA Process	Dr. David Ramirez
Instructional Leadership Development	Lynn Erickson
Integrating Technology with Instruction	Queen City ISD
Intergrated Thematic Instruction	Susan Koralik and Associates
Intergration of Reading and Writing	Dr. Marcie Mitchell
Introduction to Inquiry	Texas Center for Inquiry
Investigations	District
Jackie Holt (Benchmark Testing)	Kaplan
Jeanette Nelson	Consultant - Reading/LA
Jessie Garcia, Courtney Ellis	ESC 20
Joann Barber	ESC 1

Johnson	Web CATT
Judith Scott/Audrey Brugg	Consultant Reading
Kay Gfeller	Castro County Comp ED. SSA (1 day)
Kenmont Montessori	Beth Garza
Kent Roberts	Grimes City Spec Ed Coop
Kim Sutton Math	Kim Sutton
KIPP ELA Summit	KIPP (Knowledge is Power Program)
KIPP Math Retreat	KIPP (Knowledge is Power Program)
KIPP School Summit	KIPP (Knowledge is Power Program)
Levels of Technology Implementation	Learning Quest
Linda Allejo	Pearson - Success Make LAB Training
Linda Robinson	Professional Consultant
Literacy Closets	ILS
Literacy Collaborative	Traci Skrovan Consultants
Literacy Institute for Struggling Readers	District Lang. Arts Consultants
Lou Ann Seabourn	Amarillo (1 day)
Louise Anderson	Reading First coordinator
LuAnn Tomkinson	American Education Associates
Marcy Cook Math	
Margaret Kilgo	Kilgo Consulting, Inc.
Margaret Kilgo	Kilgo Consulting, Inc.
Margaret Kilgo	Margaret Kilgo
Margaret Kilgo - Assess	Margaret Kilgo
Margaret Kilgo - Data	Margaret Kilgo
Marilyn Burns Math	Math Solutions
Mary Coon	Independent Consultant
Mary Hukabay	District
Math Alignment	Rhonda Bailey
Math Alignment	Susan Sharp
Math and Science Training	Dana Center U of Texas
Math Assessments - Strategies for Math Acceleration	Renaissance Learning
Math Curriculum	Distric Math Corrdinator
Math for Grades 6-8	District
Math Inquiry Groups	Texas State University
Math Investigations	District Trainers
Math Investigations 3-5 grades	Holly Barajas, Carolyn Moore and Ann Valentino
Math Modules	Alice Ehlert
Math Strategies Mastery	Joshua Horton's Math
Math TAKS	Local Teachers
Math TEKS Refinement and Alignment	
Math Topics	ESC 4
Math Topics - Scope and Sequence Development	ESC 4
Math/Science Frameworks	ESC 20
Mathscape	Amy Serda-King
May the Fours be with You	William MacDonald
Meta-Metrics	
Middle School Geometry	District Math Consultant
Middle School Math Initiative	Rhonda Bailey/Nubers-Math Prof. Dev.
Middle School Number and Operations	District Math Consultant

Middle School Proportionality	District Math Consultant
Middle School Science	FOSS
Modern Red School House	Various Presenters in the subject areas,
Modifying For Success	Dr. Natalia Murray
Monica Sandoval	Kilgo Consulting, Inc.
Motivating At Risk Students	Mario Cotton
MTA Staff Development for Dyslexia	local
Multimedia Presentations	Locally Trained Administrator
National Writing Project	National Writing Project
Nature of Science	District
NCLR Sembrando Semillas	Antonia
Neuhaus Reading	Neuhaus Education Center
New Jersey Writing and Reading	Local and NJWPT
New Jersey Writing Project	Joyce Armstrong Carroll and Edward E. Wilson
New Jersey Writing Project	District Trainers
New Teacher Training	BISD Curriculum
Nori Banda	Greenbelt Special Ed SSA
Open Court Kaleidoscope PD and Core Program	SRA Reading Consultants
Open Court Reading	SRA/McGraw Hill
Our Lady of the Lake Univ.	Peggy Carahan
Page Houser	Scantek, LJ laboratories
Palm Pilot - TPRI data analysis	Open Court
Pam Lozano	Palmira Educational
Paraprofessional training	MCISD Personnel
Partnership For High Achiev.	Dana Center
Partnership for High Achievement	Dana Center
Partnership for High Achievement Math Toolset	Dana Center
Paula Goolden	IOLA ISD
Pavdian Accelerated Curriculum and System	Ronald E. Johnson
PEAK	AHA! Process, Inc.
PEIC	Tarleton ST. UN
Pieces of Learning	Carolyn Coil
Plato Software	Plato
PLC's	Solution Tree, Inc
Professional Teaching Model	Dana Center
Project Wild	
Questioning for Understanding	Varied
Reaching Students in Poverty	AHA! Process, Inc. - Dr. Ruby Payne
Reaching the Hard to Teach	Dr. Judy Wood
Read 180	Scholastic
Read 180, David Martinez	Scholastic
Read Naturally	Local Staff
Read Right Strategies	Read Right - Washington DC
Read Well	Local Staff
Reader's Workshop/Guided Read	Tammie Seay
Reading and Math Training	Lois Fisher, Inc.
Reading First	Texas Literacy Resources, LTD
Reading First	Tarleton State University
Reading First	Voyager

Reading First Grant	TDRI
Reading First Grant	Open Court
Reading First Grant	Pearson Digital Learning - Waterford
Reading First Initiative	Open Court
Reading First Training	TEA/UT/Region 20
Reading Fluency Activities	Texas Reading Consultants
Reading Institute	Cris Tovani
Reading Recovery	Reading Recovery
Reading Strategies	Reading Specialist /Coach
Reading Week - WIN	Northside Through NJWPT
Region 15	ESC 15
Renita Polland	United Streaming
Resp. to Reading	Pat Jaceby
Rewards Reading Training	SOPRIS West
Riverdeep	Destination Math
Roy Gilbert	North Zulch ISD
Ruby Payne	AHA! Process, Inc.
Ruby Payne Associates	AHA! Process, Inc.
Ruby Payne Poverty	AHA! Process, Inc.
Ruby Payne: Culture of Poverty	AHA! Process, Inc.
S. Williams	Purple Cow
SALSA Levels I-V	District
Sandra Pierce	Morgan Mill School
Sandy Beu	Consultant - Reading/LA
Sandy Jenkins Judy Love	Schlechty Center
Sandy Spuffer	GT Training Consultant
Saxon Math and Phonics/Spelling	Saxon Phonics
School Improvement Collaboration	ESC 11
School Psychologist	Bastrop County Special Education COOP
Schools Attenned	Learning Center of North Texas
Science	Stacy Solis Consulting
Science	Chris Ormstronei
Science	Rosemary Martin
Science	Texas State University
Science Alignment	Dinan Ruiz/Claudia Gonzales
Science Alignment with Betty Bates	Betty Bates
Science Assessments and On-line Instruction	Gale Thomson
Science Content Training	BISD Curriculum
Science Curriculum/Alignment	Local Staff
Science Mentor Training	
Science Our Way	Palmira Educational Consultants
Science strategies	USP (Urban Systemic Program)
Science Training .	Perkins Consulting, Inc
Science Traits	Local Teachers
Scope and Sequence	United ISD
Scope and Sequence Development	Palmira Ed. Consultants
Secondary Struggling Readers	
Sharon Meier	Balanced Literacy Institute
Sharon Wells Math	Sharon Wells Consulting, Inc.

Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math	Sharon Wells Consulting, Inc.
Sharon Wells Math Curriculum Training	Sharon Wells Consulting, Inc.
Sharon Wells Math Curriculum Training	Sharon Wells Consulting, Inc
Sheltered Instruction	ESC 4 Contract
Sheltered Instruction (SIOP)	Michael Kolak
SIOP	SIOP presenter
SIOP Training	Susan Holloway
SIOP Training (Sheltered Instruction Observation Protocol)	ESC 1
Six Trait Writing	
Six Trait Writing	
Six Trait Writing	BER
Six Trait Writing	District Writing Consultant
Six Trait Writing	Harris Co. Dpt of Ed
Six Trait Writing	Harris County Department of Education
Six Trait Writing	ISD
Six Trait Writing	ESC 13
Six Trait Writing	Great Source
Six Trait Writing	Norma Jackson
Six Trait Writing	Varied
Small Groups and Differentiated Instruction	Cathy Hinojosa, consultant
Smart Centers	ILS
Solution Tree (1 Day)	Anthony Muhammad
South Texas Rural Systemic	ATM Canyon TX
Spalding System	Spalding
Special Ed	Debra Hall
Special Education Academy	United ISD
Spot A leader	Dr. John Crain
Spring Board	College Board
Spring Board	College Board
Staff Development for Educators	Susan Kelly
Steve Patton	Quizdom
Stop to Think	
Strategies for LEP/ESL	Dr. George Gonzalez
Study of TEKS	Dana Center
Success for All	SFA Foundation
Success Maker	Pearson
Success Math	Success Center for Learning
Success Reading	Success Center for Learning
Success with TAKS 2 Day Intensive Math Academy	Texas ASCD
Sue McAdams	The Learning Group
Sue Nell DeHart	AHA! Process, Inc.
Susan Fitzll	Sullivan, Jeff (1 Day)

Susan Maxey	ESC 13
Systemic Instructional Support	ESC 20
TAKS	Dr. Diana Ramirez
TAKS - Take Action on Knowledge Seriously	
TAKS Data Disagregation Alignment	District Employees/Admin
TAKS Made Easy	Maria H. May
TAKS Math 6-12 Mathematics by Design	Rhonda Bailey
Teachers of Mathematics	Roger Garcia
Teaching With Passion	Steve Gilliland
Teaching with the Brain in Mind	Wolant Berd ISA
Technology	ESC 1
Technology Institue Modules I-V	Local
Technology Integration	La Pryor ISD
Technology Integration into the Curriculum	A+ Anywhere
Technology Resources in Content Areas	Local Teachers
Technology Training	Local Staff
TEKS Academy	Lois Moseley
TEKS Alignment	ESC 15
TEKS Based Literature	Dr. Diana M. Ramirez
TEKS Study	Sally Engstrom
TEKS to TAKS	Brook Green
TEKS Training	Dana Center
TEKS-based Science Instruction	District Elementary Science Consultant
TEKSing Towards TAKS: TEKS-Based Mathematics Curriculum	Brenda de Borde and Juanita Thompson
TEKS-Science	
TERC Math	Local and Consultant
TEXTeams	EISD Specialists
TEXTeams	Garland Linkenhoger
TEXTeams - Math	ESC 6
TEXTeams Math	Barrie Madison, Consultant
TEXTeams Training	HISD T of T
The Learning Network	R.C. Owens Publishers
Thinking Maps	Thinking Maps, Inc
Thinking Maps	Thinking Maps, Inc.
Thinking Maps	Innovative Learning Group
TI - Calculator Operations and Strategies	Texas Instruments
TI 83+	AP Strategies Inc/ESC Region XI
Tony Stead	ISD
TPRI 10RA Overview	Local Reading Staff
TPRI Training	Local
Traci Skrovan	Traci Skrovan Consulting
Traci Skrovan	Traci Skrovan Consulting
Travis Jones and David Daniel	Daniel Educational Consulting
Using Data to Drive Decision Making	Local
Vanessa Westbrook	Dana Center Austin, Texas
Various Trainers	ASCD
Vertical Alignment	ESC 6
Vertical Team	District

Vocabulary Unplugged	
Voyager	Voyager Expanded Learning
Voyager	Voyager Expanded Learning
Voyager (Reading)	Voyager Expanded Learning
Voyager Passport	Voyager Expanded Learning
Voyager V-Math	Voyager Expanded Learning
W.I.S.E. (NJWP of Texas)	Dana Center, U of Texas
Walk Thru Training	TASA
Waterford Early Math and Science and Early Reading	Pearson Digital Learning
Waterford Reading	Pearson Digital Learning
Waterford Reading	Pearson Digital Learning
WebCat	Locally Trained Administrator
Wesley Fayer	Independent
Wilson Reading	Wilson
WIN - Writing Institute in NISD	Northside Through New Jersey Writing Project
Wireless Workshop	District
Work Keys	ESC 6
Working on the Work	Phil Schlechty
Write for the Future	Thinking Maps, Inc.
Write from the Beginning	Thinking Maps, Inc.
Writers Portfolio	ILS
Writing Across the Curriculum	School District
Writing Across the Curriculum	ESC 15
Writing Across the Curriculum	Chris Anson
	Syfer Corp.
	Joshua Horton
	Joshua Horton
	Collette Consulting Group
	Sr. Pam Robbins (Consultant)
	SpEd Coop
	Dana Center UT
	ESC
	ESC
	ESC 11
	ESC 13
	ESC 13
	ESC 13
	ESC 4
	TEPSA
	Pearson Digital Learning, Rosemary - Consultant
	Plato Learning IN
	Renassance Learning
	Riverdeep
	AIMS
	Math Their Way
	Carolyn Mashburn
	Debbie Stennett
	Dr. Ellen Gonzalez

	Dr. Hussin Pezecki
	Dr. Robert Zamora
	Garland Linkenhoger
	Gene Jolly
	Janine Batzle
	John Crane (1 Day)
	Lois Mosely
	Shirley Crook
	Steve Spangler
	Sue McAdams
	UNT

TEA Evaluation
Expert Review Guidelines

Overview of Evaluation Project
In June 2006, TEA awarded a contract to SEDL to evaluate educator professional development (PD) programs implemented at the regional and local levels across the state. SEDL is partnering with two companies to fulfill the requirements of this contract: Academic Information Management (AIM) and Applied Research Solutions (ARS). Data sources for the study include: surveys of district superintendents, teachers participating in selected professional development trainings as well a broader sample of teachers at low and high performing schools across the state, expert reviews of selected PD programs, and 2006 TAKS performance data. Quantitative and qualitative analyses of data from these various sources will result in descriptions of each of the selected programs, focusing on content, delivery, accessibility and outcomes. In addition, the research team will do a cross-program analysis to identify key characteristics and promising practices of high-quality local and regional PD.

Purpose of Expert Reviews
You have been selected to participate on a panel of experts to conduct an independent review of the training materials and approaches used in two PD programs focused on your area of content expertise. All reviewers are expected to provide comments about the content and delivery of the trainings assigned to them.

Overview of Expert Review Tasks
Each reviewer will be given copies of appropriate materials that describe the training. Each reviewer will also be given the objectives of the study and general guidelines about the information and opinions to be provided. These guidelines provide an outline for reviewers to follow when writing their comments and opinions. To ensure a fair and impartial review of the materials, no other directives will be given. Each reviewer will have an opportunity to review the draft report to make sure that their comments and opinions are reported accurately. After the individual reports are completed, the reviewers will meet as a group with members of the research team to identify promising practices across the PD programs that have been individually reviewed.

Reviewer Tasks
Step 1: Checklist of Materials
Please confirm that you have received the following for your review:
       _____SEDL Expert Reviewer Guidelines
       _____SEDL Expert Panel Feedback Guide
       _____PD Program Review Materials

Step 2: Review Tasks
Each member of the Expert Panel is being asked to:
1. Review all the materials, using these guidelines to assist with your evaluation.
2. Provide a detailed description of the PD training in Section 1 of the Expert Panel Feedback Guide.

3. Provide written responses to the list of questions in Section 2 of the Feedback Guide.
4. Refer to your own specific sources and references to help you formulate your responses.
5. Provide final comments and fill in the tables provided in Section 3 of the Feedback Guide.
6. Provide list of references and a reviewer bio in Section 4 of the Feedback Guide.
7. Submit your responses electronically by the deadline arranged in your contract. Submissions should be sent to Nance Bell at: nanceb@texas.net
8. Retain copies of your responses and the materials provided for future conversations with research staff.
9. Refrain from sharing the contents of your evaluation with anyone outside of the Contact List (provided below).
10. Be available in the future to review SEDL's summary of the Expert Review section of the TEA Evaluation report for accuracy in reporting.
11. Attend a meeting of all expert reviewers and research staff to discuss cross-program promising PD practices.

Contact List
Dr. Nance Bell
nanceb@texas.net
(512) 419-8868

Dr. Melissa Dodson
mdodson@sedl.org
(512) 476-6861, ext. 370

Special Considerations
- Your evaluation is one piece of the overall evaluation project. Please be sure your responses are concise and clear.
- Your responses will be summarized by research staff to incorporate this part of the evaluation into the final report. SEDL will send summaries to you to be certain the summaries are accurate.
- Quotes may be taken directly from your provided responses.
- Findings from this evaluation are politically sensitive. Please be mindful of the way you choose to describe your findings and be prepared to defend your evaluation to critical policy makers and policy influencers.
- Please do not release your evaluation findings to anyone outside of the approved list of project contacts.

TEA Evaluation
Expert Panel Feedback Guide

Professional Development Evaluation Criteria

Each member of the Expert Review Panel will be asked to provide responses divided into four sections. In Section 1, you are asked to supply a description of the PD training you are examining. Section 2 asks you to compare the materials to what you understand to be "best practices" in your field of professional development. Questions in this section prompt you to compare the design and delivery of the assigned PD program to what you know from current research and state and national (e.g., NSDC) standards for content, teaching, and student learning. They also prompt you to consider the impact of the professional development on Texas teaching and learning (using the Texas TEKS as a guide). In Section 3, you are asked to provide concluding summary remarks regarding whether or not the PD program meets your standards for high quality professional development, and to fill in two summary tables. Finally, in Section 4, you are asked to supply a list of the resources, references, and journal articles that you used to make your overall decisions in Sections 2 & 3, and a brief reviewer biography.

Please answer the following set of questions separately for each of the two programs you are assigned to review:

Section 1. Training Description

Please provide a detailed description of the PD training you are reviewing. Be sure to include information on the following:

- number of days of training
- topics covered each day
- types of materials and resources provided
- organization of training materials (i.e., specific sections and what they cover)
- general approach taken in presenting the materials (e.g., lecture, discussion, hands-on activities, etc.)
- types of participant activities, assignments, and readings

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of [reading, math or science]? Please describe how you reached your conclusion and identify specific research you used to make your decision.
2. Is the professional development program grounded in national and state [reading, math or science] content and teaching standards? Please describe how your reached your conclusion and identify specific standards (including NSDC standards) that you used to make your decision.

3. Does the professional development program offer opportunities for teachers to become deeply immersed in [reading, math or science] content and pedagogical content knowledge?
4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in [reading, math or science]? Please describe how you reached your conclusion and provide examples (e.g., reference to specific page #s or sections in the training materials) that illustrate where the training is or is not aligned with specific TEKS components (a complete listing of the TEKS can be found on the TEA website at: http://www.tea.state.tx.us/teks/).

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

Please provide any final comments summarizing your overall evaluative decision regarding the quality of the professional development program, and then fill in the following two summary tables with information about 1) how well the training materials addressed each of the twelve NSDC standards for high quality staff development, and 2) three overall strengths and three weaknesses of the PD program.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed
Context Standards			
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.			
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.			
• *Resources:* requires resources to support adult learning and collaboration.			
Process Standards			
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.			
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.			
• *Research-based*: prepares educators to apply research to decision making.			
• *Design:* uses learning strategies appropriate to the intended goal.			
• *Learning:* applies knowledge about human learning and change.			
• *Collaboration:* provides educators with the knowledge and skills to collaborate.			
Content Standards			
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.			
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.			
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.			

Table 2. Overall Strengths and Weaknesses of the PD trainings

	Strengths	Weaknesses
1		
2		
3		

Section 4. Reference List and Reviewer Biography

Please provide a complete list of the references you used during your evaluation of the professional development program.

Please provide us with a brief (i.e., one paragraph) professional biography that identifies your qualifications, experience, and professional affiliations.

PROGRAM 1

Elementary Reading Institute
Reviewer: Susan Ebbers

Section 1. Training Description

The Elementary Reading Institute provides four days of professional development. The institute appears to concentrate on the components of reading that apply to vocabulary and comprehension, and specifically to four TAKS objectives for grades 3—6. The topics and objectives scheduled for each day are as follows:

Day 1: vocabulary, summarization, sequencing
Day 2: analyzing characters, setting, plot, point of view
Day 3: using strategies to analyze text
Day 4: drawing conclusions, fact/opinion, cause/effect, inferences

The materials and supplies in the binder include explanatory introductory standards and testing information followed by graphic organizers, worksheets, helpful lists, narrative and expository text samples, and resources to support lesson suggestions. References are made to a BER video, but the video itself was not included with the binder. There is an electronic slide presentation that accompanies each day of the institute. The slides themselves offer limited information regarding process/delivery of the institute (i.e., there are some process slides, but they are intermittent. The process in the interval is unknown. Timeframes and speaker notes are not provided).

The binder is organized into four tabbed sections for each of the four days of delivery. Each of the four tabbed sections covers a specific reading topic, as described above. Each section begins with the state standards for grades 3-6, including supporting information. A general overview of big ideas can be found on the pages after the standards, but this is not consistent in each section. The bulk of the binder includes graphic organizers, lesson plan ideas, applicable word lists and book lists, black-line masters, expository and narrative samplings, and some sample tests. The binder is not paginated, so it is difficult to refer to a specific page number in this report; a lack of pagination might also make it difficult to efficiently access the content from a delivery perspective. Some of the sections include a resources subsection and others include a subsection called "putting it all together" and/or an appendix.

The general approach or process for delivery is not apparent in the binder or in the slide presentation. It would appear that there is an introductory section, followed by lecture concerning the relative standards and big ideas for the topic. There does not appear to be a focus on presenting the research, as few researchers are cited. After the overview of the big ideas, it appears that the presenter provides the participants with guidelines and time to explore the various resources and to discuss and perhaps practice some of the sample lessons. This exploration of the content appears to be facilitated by the presenter, using

intermittent slides as a prompt. The final slide for each day prompts the participants to ask questions; it appears to be a closure slide.

No mention is made of homework but there seems to be too much material for one day. Some pages in each section might, therefore, be assigned as homework, but that information is not provided.

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

General comment: This program appears to focus on the "what" of instruction (activities) far more than the who, when, why, and how. There are so many handouts and so many activities or strategies that there is insufficient time for deep processing. It is important to understand the principles and rationale behind a strategy, handout, or activity. Also, this program does not appear to provide a framework for strategy application that is aligned with student needs revealed through assessment results.

Note: The presentation slides are not numbered and the binder pages are not numbered. More information is required regarding the correlation between slides and binder pages. To expedite this process, I have inserted slide numbers below, but they are not on the slides themselves; they can be found on the toolbar at the bottom of the monitor.

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of reading?

This institute includes many of the major elements necessary to develop vocabulary and comprehension as outlined in the selected TEKS Reading Objectives. The binder contains an abundant and helpful supply of supporting resources and the slide presentation outlines key ideas. Much of the content is in alignment with scientifically based reading research. Very few items contradict research findings or clinical knowledge regarding vocabulary and comprehension. However, this program does not fully coincide with current research findings; some important components of vocabulary and comprehension instruction are not included in this institute. This may be because this program was initially created some years ago. While it contains a wealth of helpful resources, it is also missing some important pieces and appears to be in need of revision.

The following section attempts to identify missing links or critical findings that are not reflected in the binder. These missing components might be included to update the program with current practical applications of clinical research.

There appears to be an imbalance between vocabulary and comprehension in this institute. While 3.5 days are devoted to comprehension, only one-half day is focused on vocabulary development. Because vocabulary contributes so strongly to comprehension of text, this imbalance does not make pedagogical sense (Nagy & Scott, 2000). There is a close correlation between vocabulary development at age three and reading comprehension in grade 11 (Cunningham & Stanovich, 1997). Vocabulary is a major

factor in the "4th grade slump" (Chall & Jacobs, 2003). The amount of vocabulary material presented in this half-day is sufficient to provide professional development for two full days, including processing time.

Some critical concepts regarding effecting reading instruction are either completely missing or only partially or vaguely defined: monitoring progress, grouping for success and differentiation, and selecting appropriate text. Another critical topic, delivering systematic and explicit instruction, is given some attention in this module, but it is not sufficient to initialize or to realize change.

It addition, it appears that the relationship between fluency, vocabulary, and comprehension is missing from this institute. The concept of differentiating instruction for various fluency levels is not explicit in this institute. The National Reading Panel found that guided oral reading in small groups is sufficient for normally progressing students, but that struggling readers need a more structured, systematic, and explicit emphasis on developing fluency as well as vocabulary (NICHD, 2000). Fluency and vocabulary contribute strongly to comprehension.

The program does not appear to address the needs of English Language Learners, especially as it relates to vocabulary acquisition. There is a need to include the value of using cognates, teaching academic language, multiple meanings or polysemy, providing additional opportunities for dialogue and conversation, and providing concrete picture clues or realia where possible (Nagy, Garcia, Durgunoglu, & Hancin-Bhatt, 1993; Carlo et al., 2004; August, Carlo, Dressler, & Snow, 2005).

The vocabulary module does not mention the importance of fostering word consciousness, also called morphological awareness or linguistic awareness (Anderson & Nagy, 1992; Graves, 2000; Graves & Watts-Taffe, 2002). This is one part of a comprehensive vocabulary program (Graves, 2000). By inference, one might find this concept sprinkled throughout the institute, but it is not explicit.

Another important component of vocabulary instruction involves correct articulation. The teacher needs to model correct articulation and have the students articulate the word. The word must be linked to its pronunciation, phonologically (Gathercole, Willis, Emslie, & Baddeley, 1992). Accented syllables must be clearly modeled and practiced. "Knowledge of a word includes how it sounds, how it is written, how it is used in speech..." (Nation, 1990; Nagy & Scott, 2000). This concept does not seem to be included in the vocabulary section.

This program provides a wealth of helpful resources to develop the important skill of morphemic analysis. There is an error on slide 35: "A root is a part of a word that comes from another language. (inter-fer-ed) "fer" is the Latin root for "to bear and carry". In fact, the Latin root *fer* means *to strike* and the root for *to carry* is *port* as in the words *export* and *transportation*. The reviewer suggests using this substitution or any Latin root that closely aligns to current meaning, i.e., *fract* for *to break* as used in the words *fraction, fracture,* and *refract*.

The binder makes the misleading statement that "When authors use more sophisticated words, they frequently embed clues so the reader can determine the word's meaning" (first sentence of page titled *Using the Clues Authors Provide*). Slide 15 correctly contradicts this notion, stating that context is unreliable. Research findings show that only about 5-15 percent of unknown words can be solved through context clues (Nagy, Herman, & Anderson, 1985; Swanborn & de Glopper, 1999; Beck, McKeown, & Kucan, 2002, p. 3). This contradiction needs to be clarified. It is also important to clarify, for the sake of differentiated instruction, that strong readers make better use of context clues than those who are less proficient.

The module encourages wide reading to develop vocabulary, but the reviewer can find no mention of the importance of selecting appropriately leveled books in response to reading variance.

The Word Tiers concept for word selection and delivery of instruction (Beck et al., 2002) is not included in this institute. While the suggestions for word selection on slides 21--22 are logical, they are not up to date regarding word selection methods.

The reviewer can find no mention of key high frequency vocabulary lists, such as the Dale-Chall list of 3000 primary words, the Dolch list, etc. This information might be useful to elementary teachers.

The program offers a wealth of comprehension supports that are of benefit to the teacher and the student. However, only some of the eight effective comprehension strategies, outlined by NICHD (2000), are included in the module. Again, there is a need for a more systematic and explicit approach to comprehension, with direct instruction, guided practice, gradual release of responsibility towards independent practice. Several of the items listed below are not included in this program, but some aspects of each one appear to be represented in some of the comprehension strategies offered in this module.
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- Comprehension Monitoring
- Cooperative Learning
- Graphic Organizers
- Question Answering
- Question Generating
- Story Structure
- Summarization
- Multiple Strategy Teaching

2. Is the professional development program grounded in national and state math content and teaching standards?

This professional development program partially meets the National Staff Development Council (NSDC) *Standards for High Quality Staff Development*, particularly in reference to the content standards. It may meet more of the criteria for context standards and

process standards; this is difficult to determine, due to limited information regarding how the information in the binder and on the slides is conveyed to the participants or how the decision was made to attend this institute (i., e., was the decision to access this institute based on needs revealed by data-study at the specific school?).

Content Standards, as identified by NSDC, involve issues of equity, quality teaching, and family involvement. Equity issues include creating a learning environment that holds high expectations for all students; this is not addressed in this program. Differentiation, or grouping students for success as guided by data (screening, progress monitoring, etc.) is not explicit in this institute. The needs of special populations of learners are not addressed: English Language Learners, Special Education students, etc.

Quality Teaching is another subsection of the NSDC Content Standards. This professional development module meets some of the requirements for this standard: it deepens content knowledge and provides research-based strategies (but the research is rarely cited so the learner can go no further with it). Assessments are mentioned, but only in terms of the TEKS outcome assessment. Screening, progress monitoring, and curriculum-based assessments do not appear to be included in this program.

Family Involvement is the third and last Content Standard (NSDC). This standard does not appear to be addressed at all in this program.

3. Does the professional development program offer opportunities for teachers to become deeply immersed in reading content and pedagogical content knowledge?

The Elementary Reading Institute provides some opportunities for deep immersion in reading content. Many helpful content strategies and information are provided in this seminar. However, pedagogical content knowledge does not appear to be a strong focus. The rationale for using the strategies or information is not evident. The institute does not seem to indicate clearly how to select a strategy prescriptively or diagnostically to differentiate instruction for the needs of diverse learners.

4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in reading?

TEKS objectives are listed in the front of the binder section, in a summary list for each topic. Specific information for aligning TEKS to content (i.e., which TEKS correlates with which slide, strategy, or handout) is not provided, so the reviewer can only speculate.

Nonetheless, this program appears to be in fairly strong alignment with the specific Texas Essential Knowledge and Skills for which it was designed, as detailed in each topic's subsection. Because it does not include information regarding areas beyond the selected topics, it may be a misnomer to call it an elementary reading institute: it is a vocabulary and comprehension institute for grades 3-6 and only TEKS for 3- 6 are provided.

There are too many TEKS to examine in detail in the time allocated for this review, so a sampling is analyzed below. The following TEKS examples, taken from the binder, day one, correspond well with the content for day one, with some exceptions. The reviewer notes such exceptions in *italics* below:

TEKS listed in the binder:

Part 1: Vocabulary and Comprehension

Grade 3

(3.5) Reading/word identification. The student uses a variety of word identification strategies. The student is expected to:

    (D) use root words and other structural cues such as prefixes, suffixes, and derivational endings to recognize words (3)

    (E) use knowledge of word order (syntax) and context to support word identification and confirm word meaning (1-3)

(7) Reading/variety of texts. The student reads widely for different purposes in varied sources. The student is expected to:

    (B) read from a variety of genres for pleasure and to acquire information from both print and electronic sources (2-3)

Note: There does not appear to be a strong correlation to electronic reading sources.

(8) Reading/vocabulary development. The student develops an extensive vocabulary. The student is expected to:

    (C) use resources and references such as beginners' dictionaries, glossaries, available technology, and context to build word meanings and to confirm pronunciations of words (2-3); and

    (D) demonstrate knowledge of synonyms, antonyms, and multi-meaning words (for example, by sorting, classifying, and identifying related words) (3).

Note: While dictionaries and context are included in this program, there is no information regarding how to select well-designed, student-friendly dictionaries. Technology does not appear to be a focus of the module, either. Pronunciation of words does not appear to be mentioned in the materials.

Because fluency is closely linked to both vocabulary and comprehension, there is a need to address and include the Texas objectives that align with fluency. For example, for grade three, the following TEKS might be included in this seminar:

§110.5. English Language Arts and Reading, Grade 3.
Part (b) Knowledge and Skills:

(6) Reading/fluency. The student reads with fluency and understanding in texts at appropriate difficulty levels. The student is expected to:

    (A) read regularly in independent-level materials (texts in which no more than approximately 1 in 20 ords is difficult for the reader) (3);

    (B) read regularly in instructional-level materials that are challenging but manageable (texts in which no more than approximately 1 in 10 words is difficult for the reader; the "typical" third grader reads 80 wpm) (3);

    (C) read orally from familiar texts with fluency (accuracy, expression, appropriate phrasing, and attention to punctuation) (3);

(D) self-select independent-level reading such as by drawing on personal interests, by relying on knowledge of authors and different types of texts, and/or by estimating text difficulty (1-3); and

(E) read silently for increasing periods of time (2-3).

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

This program has doubtless been of benefit to hundreds of teachers over the years. Many of the components in this program are of great value. With a little revising, this institute will more fully align with reading research, with practical application, and with state and national standards for reading and for high quality professional development.

In general, this professional development program does not meet the standards for high quality professional development. It offers a wealth of beneficial strategies, activities, and information to the participants, but it appears to be missing some critical content. There is a need to include some of the missing components mentioned in section two. Content needs to be shaped by some critical big ideas: assessment and data analysis (especially screening and progress monitoring), explicit instruction, and differentiated instruction to meet the needs of the diverse learners in the class, including English Language Learners. Fluency and text selection needs to be included.

In delivery, it appears to process much too quickly through far too many strategies and activities. There is a need to pare down the content to include only a few critical strategies and to allow time for deep processing and practice of those tools. Research needs to be cited so participants may collaboratively read further, discuss ideas and applications, and build learning communities. This is in keeping with NSDC guidelines for teaching adults and realizing change.

This analysis only reflects what is written in the binder and on the slides. The review acknowledges that the actual presenter may verbally include some or all of the items mentioned above.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.				X
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.				X
• *Resources:* requires resources to support adult learning and collaboration.				X
Process Standards				
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.			X	
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.			X	
• *Research-based*: prepares educators to apply research to decision making.			X	
• *Design:* uses learning strategies appropriate to the intended goal.		X		
• *Learning:* applies knowledge about human learning and change.		X		
• *Collaboration:* provides educators with the knowledge and skills to collaborate.		X		
Content Standards				
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.		X		
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.		X		
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.				X

Note: It is not possible to evaluate the Context Standards; this type of information was not provided.

Table 2. Overall Strengths and Weaknesses of the PD trainings

	Strengths	Weaknesses
1	There are some very helpful handouts, lists, graphic organizers, strategies, etc. They provide immediately useful and practical applications for the classroom.	This program might be improved by focusing more fully on only a few key strategies. For example, successful implementation of the Question Answer Relationship (QAR) strategy depends on more thorough processing than appears to be provided in this module (see Day 3, Slide 17).
2	The vocabulary section appears to include a strong emphasis on teaching specific word meanings in varied context, including personal student-made context. This reflects the research of Stephen Stahl and Isabel Beck and her colleagues. (Neither Stahl nor Beck are cited, however.)	This program does not address the needs of diverse learners; it does not provide for differentiated instruction, nor does it make a strong statement for explicit instruction for intensive level readers.
3	Numerous effective comprehension activities are provided.	This module does not appear to provide training in use and interpretation of assessments, including screening, progress monitoring, and diagnostic tools, as they apply to fluency, vocabulary, or comprehension.

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PROGRAM 2

**Effective Instruction for Secondary Struggling
Readers: Research-Based Practices
Reviewer: Susan Ebbers**

Section 1. Training Description

This module provides plans and resources for three days of adult professional development. Participants develop a better understanding of how four key reading components apply to older struggling readers: comprehension, vocabulary, word identification, and fluency. The topics are distributed across three days in the following schedule:

Day 1: introduction, comprehension
Day 2: comprehension, vocabulary
Day 3: word identification, fluency

This program is packaged in a binder that includes speaker notes, full-color transparencies, participant notes, handouts, teacher resources, and references. A set of research to practice articles is provided to reinforce understanding of the pedagogy and the activities presented at the sessions. A video is also included with this program. In some cases, alternative handouts are provided in Spanish.

The organization of the materials is user-friendly and all-inclusive. A carefully coded script for each transparency and handout is provided for the presenter, and as long as the content is not changed the presenter may deviate from the script. Speaker notes also include specific details concerning time frames and processing or delivery plans.

This institute appears to begin with big ideas, including the research base and standards, and then progress to specific strategies and tips. Brief video clips provide strategy and adaptation demonstrations in classroom settings, with classroom management and progress monitoring tips interspersed throughout. Participants are given frequent opportunities to process the new information in small groups and to reflect on their learning. The presenter seems to be viewed as a person with knowledge and expertise, as well as a facilitator and guide.

Homework is assigned each day.

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of reading?

General observations:

In general, this program is aligned with current research in reading pedagogy. Critical skills essential to reading development are included: word identification, fluency, vocabulary, and comprehension. The vocabulary module is in need of some revision. There is a reasonable mixture of research and application opportunities and great breadth of application. Main ideas are listed on the slides and reinforced through discussion and participation in activities, as well as through the related handouts: black-line masters, graphic organizers, reading lists, etc. One topic that seems to be missing or not clearly outlined is the importance of motivation and self-efficacy for adolescent readers.

Caveat: This analysis reflects a very careful scrutiny of the entire expansive collection (slides, handouts, speaker notes, video, etc.), but some small-print notations may have been overlooked.

INTRODUCTION MODULE

This section provides an overview of the big ideas of this professional development, including a wide-angle view of comprehension, word identification, fluency, and vocabulary. It provides specific research-based information for meeting the needs of English Language Learners or bilingual education, helping students overcome dyslexia, and providing adaptations for special needs and for individualized education plans (IEPs). Information for grouping for planning lessons, managing the class, differentiating instruction, providing explicit instruction, monitoring progress, and selecting appropriate text is also provided in this section. Everything appears to be in alignment with research.

The list of Greek and Latin morphemes, Handout 22-C, includes very uncommon roots as well as high frequency roots. In light of research on morpheme frequency (White, Sowell, & Yanagihara, 1989) the reviewer suggests reducing the exhaustive list to include only high frequency roots and prefixes. In addition, these tables do not provide example words for each morpheme (i.e., -*ject*- means *to throw,* as in *projectile, reject, interjection*), which limits the usefulness of the resource.

COMPREHENSION MODULE

This program structures comprehension strategies around the framework of before, during, and after reading and includes several vocabulary strategies as a comprehension scaffold. Handout 13-A provides a guide for how to model a think-aloud to teach the students to self-monitor as they read. A wealth of useful graphic organizers are included, as well as suggestions for student-designed organizers. In addition, the comprehension section provides information and adaptations for differentiating instruction for special needs, including special education students and English Language Learners. The content also includes useful tips for planning instruction, grouping students, scheduling reading blocks, and providing explicit instruction. Speaker notes and participant handouts include TEKS links.

The comprehension section includes seven of the eight comprehension strategies (listed below) identified by the National Reading Panel (NICHD, 2000) and outlined in *Put Reading First* (Armbruster, Lehr, & Osborn, 2001). The comprehension strategy of using cooperative and collaborative learning approaches to discuss the text appears to be missing from this seminar. There is so much information in this section that is might be helpful to frame it around these eight strategies. It might be helpful to have one slide that lists the "Great Eight" as they are sometimes called and to order the rest of the strategies within that framework. This may improve retention of the many ideas collected in the comprehension section.

•Comprehension Monitoring
•Graphic Organizers
•Question Answering
•Question Generating
•Story Structure
•Summarization
•Multiple Strategy Teaching
•Cooperative/Collaborative Learning

Comprehension assessment:
There appears to be little information regarding screening or formal diagnostic assessments for comprehension. The video does include a brief reference to informal and brief progress monitoring: the teacher scans students' work at their desks. Handout 14-A also provides some very helpful information regarding informal progress monitoring of comprehension.

VOCABULARY MODULE

The vocabulary section of this module does not contradict research, but neither does it reflect some key findings and important practices. Unlike the other sections, the vocabulary section needs to be revised. In the following pages, the reviewer attempts to identify missing links or critical findings that do not appear to be reflected with presence in the presentation (in some cases the concept is mentioned as an incidental reminder in the speaker notes). Since vocabulary plays such a critical role in comprehension, and since struggling secondary students have an immense language gap to overcome, the vocabulary module might be expanded to a full day. The following missing elements might be included to update the program:

The reviewer could find no strong statement, with strong visuals to support it, regarding the close connection between vocabulary knowledge and comprehension. This was not found in either the comprehension section or the vocabulary section in any meaningful way (found in small print, seemingly as an aside). Stanovich (1986) found reciprocal causation between vocabulary and reading achievement. There is a close correlation between vocabulary development at age three and reading comprehension in grade 11 (Cunningham & Stanovich, 1997). Vocabulary is a major factor in the "4th grade slump" (Chall & Jacobs, 2003).

Slide 3: There are some questionable vocabulary acquisition statistics (bullets taken from slide). See reviewer comments inserted beneath each bulleted statement:

Slide 3 • 2,500 – 5,000 words learned by ages 5 to 6 years

At first, it appeared that this statement referred to all vocabulary, including receptive listening vocabulary, for which the total number would be much larger. The speaker notes clarified the confusion; this statement refers to only expressive spoken vocabulary and is correct. However, since visuals positively impact retention, this slide might be revised to make this distinction clear. Also, consider including the 5th grade acquisition information (below) to make it more suitable for secondary teachers:

10,000 words are recognized (heard and understood) by first grade and 40,000 words are recognized by fifth grade. 4,000-5,000 words are produced (spoken) by first grade and 8,000 words are produced by 5th grade (Menyuk, 1999, p. 25).

Note: vocabulary acquisition estimates "varied wildly...from 2,562 to 26,000 words known by first-graders" (Stahl, 1999, p. 9). Moats (2001) writes that the language gap between children entering first grade is quite large (20,000 words versus 5,000 words).

Slide 3 • 3,000 words per year learned during early school years

3000 words is true not only for early school years, but also for intermediate and secondary grades (Beck & McKeown, 1991). Carlisle (2002, p. 96) writes: "During the school years, (kindergarten through 12th grade), on average students learn about 3,000 words each year. This means that students with better language-learning abilities and more experience with language may be learning 5,000 words a year, whereas students with language learning problems may learn as few as 1,000 words a year."

Slide 3 • Incidental learning critical: about 25% to 50% of vocabulary growth (Also refer to Slide 16 Context Clues)

Sometimes teachers overestimate the value of context clues for struggling readers. For struggling readers especially, the plan for teaching context clues must be very carefully considered (Carlisle, 2002, p. 101). The following information might be included to further explain slide 3 and slide 16:

Research findings show that only about 5-15 percent of unknown words can be solved through context clues and thus learned incidentally through reading (Nagy, Herman, & Anderson, 1985; Swanborn & de Glopper, 1999; Beck, McKeown, & Kucan, 2002, p. 3).

Carlisle (2002, p. 98) states "For students who are struggling readers or whose vocabulary development lags behind their peers, incidental word learning is a slow and challenging process in both oral and written language contexts (see Carlisle, Fleming, & Gudbrandsen, 2000).

Additional Vocabulary Notes:
As mentioned in the introduction module, struggling readers will benefit from a more carefully sequenced instructional design for learning the meanings of the most common morphemes than this module suggests. The reviewer suggests limiting the content to the more common prefixes, roots, and suffixes, and adding compound words to the morphology section.

Information regarding teaching vocabulary to English Language Learners or students of limited language proficiency is sparse and only incidentally mentioned. There is a need to include more explicit information for integrating Spanish cognates into instruction. Language learners also need vocabulary instruction that includes academic language (this is included to some extent in the module), multiple meanings (polysemy), idiomatic expressions, and additional opportunities for structured conversation. The module might also include information for providing concrete picture clues or realia, where possible (Nagy, Garcia, Durgunoglu, & Hancin-Bhatt, 1993; Carlo et al., 2004; August, Carlo, Dressler, & Snow, 2005).

Information about the selection of student-friendly dictionaries for the classroom (i.e., Longmont Dictionaries, electronic dictionaries, etc.) is not included. This is especially important for struggling readers and English Language Learners.

In general, all teachers in all subject areas need to model correct articulation when teaching a new vocabulary word. The students need to articulate the word. The phonological representation must be mapped to the orthographic (Gathercole, Willis, Emslie, & Baddeley, 1992). Accented syllables must be clearly modeled and practiced. "Knowledge of a word includes how it sounds, how it is written, how it is used in speech..." (Nation, 1990; Nagy & Scott, 2000). This concept does not seem to be included in the vocabulary section. This need for articulation and mapping sounds to syllables is especially true for students with learning disabilities, such as dyslexia (slide 11).

The reviewer found limited information regarding the value of using the target word in common classroom conversation, and encouraging the students to do so, frequently, moving from receptive vocabulary to expressive--from speech to print.

The vocabulary module does not mention the importance of fostering word consciousness, also called morphological awareness or linguistic awareness (Anderson & Nagy, 1992; Graves, 2000; Graves & Watts-Taffe, 2002). This is one part of a comprehensive vocabulary program (Graves, 2000). By inference, one might find this concept sprinkled throughout the module, but it is not explicit.

Note: Vocabulary handout 21C repeats the directions at the top of the page.

Vocabulary assessment:

There appears to be little information regarding vocabulary assessment. This may be in large part due to the dearth of progress monitoring tools available for assessing vocabulary for older struggling readers.

Suggestion: Add the use of word walls, word banks, vocabulary notebooks, and/or word cards (perhaps index cards punched in the corner and attached to a ring); provide suggestions and strategies for using these tools to review words over time and to monitor retention and expansion of meaning.

Suggestion: Create a plan for monitoring and tracking progress in understanding the meaning of the most common and fundamental prefixes and roots (listed in Stahl, 1999, p. 46—49, researched by White, Sowell, & Yanagihara (1989)).

FLUENCY MODULE

The fluency module appears to be aligned with research findings as well as best practices. It offers a wealth of fluency instruction and assessment techniques, including modeling fluent reading, repeated reading, monitoring fluency through timed reading events, error analysis, and progress charting/graphing over time. The term *prosody* does not seem to occur anywhere in this module. Even though it is not the same as fluency, the two are related; this might be included to further expand the vocabulary of literacy.

Fluency Assessment:

There is a great deal of excellent assessment information provided in this module. The reviewer has a few suggestions:

Suggestion: Graphing Fluency Data, Handout 5D: Provide information concerning how to interpret the fluency data plotted on the graph. Teachers might think about the graphed data in relation to instructional practices. For example, if the plots on the graph are maintaining a somewhat flat slope over time, then the instruction may need to be revised or differentiated (adjustments might include size of group, minutes of instruction, intensity of instruction and guided practice, type of reading materials, etc.).

Suggestion: Provide information about normal fluency growth and accelerated fluency growth (through intensive intervention). Some norms have been developed to help educators decide how many new words per week might be considered average progress (see Hasbrouck, Fuchs, Shinn, etc.).

Suggestion: Group administered reading fluency tests have recently become available for older students. See Pro-Ed's Test of Silent Word Reading Fluency (TOSWRF). I believe Joe Torgeson is in the process of designing such a test, too.

WORD IDENTIFICATION MODULE

The word identification module appears to be thoroughly aligned with research findings as well as best practices. It provides instruction in teaching students to recognize words: vowel and consonant patterns, syllable types, vowel charts (a Spanish vowel guide), structural analysis (affixes, roots, base words, compound words and contractions) and high frequency sight words.

Assessment: The word identification module contains a good deal of information regarding the various tools available to assess decoding and encoding skills, syllabication, etc. There is some information regarding major high frequency word banks, as well.

2. Is the professional development program grounded in national and state reading content and teaching standards?

Content Standards, as identified by NSDC, involve issues of equity, quality teaching, and family involvement. Equity issues include creating a learning environment that holds high expectations for all students (English Language Learners, Special Education students, etc). Equity is consistently addressed in this program, except for the vocabulary section, where English Language Learners are not adequately addressed. Differentiation, or grouping students for success as guided by data (screening, progress monitoring, etc.) is also addressed in this institute.

Quality Teaching is another subsection of the NSDC Content Standards. This professional development module deepens content knowledge and provides research-based strategies and research to support it. Screening, progress monitoring, and curriculum-based assessments are included in this program.

Family Involvement is the third and last Content Standard (NSDC). This standard does not appear to be addressed at all in this program.

3. Does the professional development program offer opportunities for teachers to become deeply immersed in reading content and pedagogical content knowledge?

The Secondary Struggling Readers Institute allowed for many opportunities to become deeply immersed in both content and pedagogy. Teachers were provided with strategies as well as a rationale for how, when, and why to use them in the classroom. Applications for differentiating instruction in the classroom to meet student variance were very much a part of this seminar. Also, deep immersion was influenced positively by providing participants with some of the research behind the strategy.

4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in reading?

This program is in alignment with the specific Texas Essential Knowledge and Skills (TEKS) for which it was designed. As it is an intervention module, it is not always in alignment with the corresponding grade level. It may be a mistake to list only TEKS for grades 4-12, when in fact, instruction is occurring at a foundational level using precursor (primary) TEKS, as well.

The TEKS listed in each module are quite extensive, and it would take months to thoroughly analyze their alignment to the actual content and delivery. Instead, I have commented on one particular TEKS which poses some problems:

TEKS 5.7B: The student is expected to read regularly in instructional-level materials that are challenging but manageable (texts in which no more than approximately 1 in 10 words is difficult for the reader; a "typical" fifth-grader reads approximately 100 wpm).

Some researchers consider text in which only 90% of the words are known to be bordering frustration level reading material. 95% might be more appropriate for struggling secondary readers. "An important rule of thumb for guiding students towards a book at an appropriate level of difficulty is that there should be no more than 5 words in 100 that are hard for a given student to read" (Carlisle, 2002, p. 100).

The statement that a "'typical' fifth-grader reads approximately 100 wpm" is not in alignment with new fluency norms. According to Hasbrouck and Tindal (2006) the new fluency norms differ somewhat from the 1992 norms. For example, 4th and 5th grade norms are somewhat higher than they were. These new norms align fairly well with the norms compiled by DIBELS and Edformation. In the new norms, a fifth-grade student reading at the 50th percentile reads approximately 110 words correctly per minute in the fall, 127 words in the winter, and 139 by the end of fifth grade.

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

In general, this is a very well conceptualized and carefully structured program. The consistency in presentation throughout each module assists both the presenter and the learner. The Texas road map logo is not only clever; it is also consistent, thus providing cohesion. For the most part, this professional development program meets the standards for high quality professional development. It offers a wealth of beneficial strategies, activities, and information to the participants in the critical components necessary for adolescents who cannot read well. There is a need to include some of the missing components mentioned in the vocabulary section.

The delivery methods involve some lecture and a good deal of brief but focused active engagement and interaction with the materials among colleagues. This program should help develop professional learning communities and is in keeping with NSDC guidelines for teaching adults and realizing change.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.				X
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.				X
• *Resources:* requires resources to support adult learning and collaboration.				X
Process Standards				
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.		X		
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.	X			
• *Research-based*: prepares educators to apply research to decision making.	X			
• *Design:* uses learning strategies appropriate to the intended goal.	X			
• *Learning:* applies knowledge about human learning and change.	X			
• *Collaboration:* provides educators with the knowledge and skills to collaborate.	X			
Content Standards				
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.	X			
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.	X			
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.				X

Note: It is not possible to evaluate the Context Standards; this type of information was not provided.

Table 2. Overall Strengths and Weaknesses of the PD trainings

	Strengths	Weaknesses
1	The layout, organization, and structure of the program is excellent and the video provides an additional bonus.	The vocabulary section is in need of some revision to reflect new findings and trends in vocabulary instruction.
2	There are many helpful handouts, lists, graphic organizers, strategies, etc. They provide immediately useful and practical applications for the classroom.	There are too many TEKS listed, especially for comprehension. It might be better to list only the TEKS that are the most thoroughly addressed. The TEKS are listed inconsistently. In some cases, the complete TEKS objective is included, in other cases, only the TEKS number. This needs to be addressed.
3	The needs of all learners are considered in this institute: those with dyslexia or any reading disability, those in need of accommodations, English Language Learners, etc.	

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PROGRAM 3

The Elementary Mathematics Institute
Reviewer: Dr. Maggie Myers

Section 1. Training Description

The Elementary Mathematics Institute is a seven-day mathematics professional development. While each day's training did not utilize exactly the same set of activities, the topics covered are as follows:

Day 1 - Tools and Place Value
This day centers on how children learn mathematics and sets the stage for a problem solving approach to learning mathematics. Training materials include an overview and history of mathematics education issues and provides a broad overview of the NCTM Standards as well as the TEKS. Other materials provided include information about using manipulatives, math journals, literature connections, estimation strategies, and rubrics. Also, the practice of mathematics conceptual development flowing from concrete to bridging to symbolic is presented. The mathematics content area investigated on Day 1 is place value. A hierarchy of place value skills is provided. In addition, activities to do with students are integrated.

Day 2 - Addition and Subtraction
This day focuses on addition and subtraction. Training materials convey the primary thinking models, thinking strategies, and methods for teaching traditional and low stress algorithms. Games and activities for students are also provided.

Day 3 - Multiplication and Division
Training materials on multiplication and division express the primary thinking models, thinking strategies to learn facts, and methods for teaching algorithms. Games and activities for students are provided.

Day 4 - Fractions
Training materials for fractions include a discussion of teaching the concepts of fractions, decimal fractions, per cents and integers. Again, they incorporate games and activities for students.

Day 5 - Geometry
Materials for this day include a nice TEKS flow for the geometry strand, research on levels of understanding geometric concepts (van Hiele 1984), a reading on integrating geometry into the Mathematics Curriculum, a children's literature list, and activities. It was noted that several pages seemed left out here. These seemed to contain information concerning food, journal writing and assessment.

Day 6 - Measurement
Training materials include discussions on the stages of conceptual development, types of measurements and how to bridge between concrete and symbolic. They include children's literature connections and journal writing tips. They also include many activities for students.

Day 7 - Probability and Statistics
Training materials include TEKS and NCTM Standards overviews; discussions on using probability, tools for statistics, and experiments; activities; a resource list; and a children's literature list.

A very thick binder of materials and resources was provided. The materials are organized in order of day of training by content. So, the sections include:

> The Tools of Mathematics Teaching
> Teaching Whole Number and Place Value
> Teaching Addition
> Teaching Subtraction
> Teaching Multiplication
> Teaching Division
> Fractions
> Geometry
> Measurement
> Probability and statistics

The sections are separated before and after by color card stock. Each section begins with a Table of Contents, but numbering is not consistent. Sections begin with insights and research on how children think about the topic. Next, guidance about teaching the topic is offered, followed by a discussion of the early development of ideas, often using concrete models and progressing to bridging to symbolic representations. The discussion of number and operation opens with learning facts and proceeds to teaching algorithms for larger numbers. Many helpful strategies are discussed. Then, each section contains activities ending with materials for teachers to use to help them recreate these activities with their students. Other resources, such as lists of children's literature, are also often included. Only one section, Probability and Statistics, includes a description of the related grade-specific TEKS.

The general approach taken in presenting the materials seems to be some lecture with discussion, and many hands-on activities that teachers may take back to their classes. The materials do not offer details about the types of participant activities included. However, based on the training materials and other materials provided, I would expect some readings, but mostly hands-on student activities. The teachers are asked to complete a form that lists under each day what they are committed to implementing. Most of the descriptions on the forms are of activities that they plan to take back to their classrooms.

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of math?

The new knowledge, skills, and understandings about teaching and learning in mathematics are generally grounded in research. Research is cited in the content materials at the beginning of each section (each day), describing classroom instructional practices that have evidence of being effective. However, the materials might be enhanced by applying the research described by the National Research Council in *Adding it up: Helping Kids Learn Mathematics*. For example, students communicating mathematics through journaling is encouraged in the professional development. However, research also "suggests that students are capable of listening to their peers and to the teacher and making sense of an algorithm if it is explained and if the students have diagrams or concrete materials that support their understanding of the quantities involved" (National Research Council, 2001). The professional development doesn't address questioning strategies to get children to communicate and explain their thinking.

Reasoning and algebraic thinking seem to be missing pieces. There is less attention to helping students look for and predict patterns and "regularities." While instructional strategies suggest asking students to apply patterns to develop what authors refer to as "free rides" (i.e., figuring out facts from other known facts), they don't reveal how to help students look for patterns and relationships. According to the National Research Council (2001), "more attention needs to be paid to including activities in the curriculum on identifying structure and justifying."

In addition, the professional development applies a limited number of models to develop number concepts. For instance, it does point out the different addition/subtraction problem types (for example, join, separate, part-part-whole, and compare), but still talks about the "primary model" of part-part-whole instead of embracing other models (Carpenter, 1996). For multiplication, the area model that can be useful to develop two-digit multiplication is not addressed.

The materials alone provide little evidence that the professional development is grounded in specific research on "best practices." However, it has been reported that this seven-day training occurs over a period of several months with time in between training days for participants to use what they learn in the classroom. Without observing the training directly, several assumptions were made on my part as I attempted to understand the delivery of this training: 1) I assume that the professional development is connected with one developer who supports the participants during and after the training takes place. I assume this because one individual's name is associated with all of the materials I have seen; 2) I assume that participants work in different groupings that ensure collaboration and require collective participation during the professional development. Implementation is not addressed other than a commitment made by participants to take some of what they learned back to their classrooms. I assume collaboration continues if teachers from the

same schools attend the training. However, the training materials are not designed to make sure this is the case. If these assumptiona are correct, this training will more likely cause greater improvements in teachers, as they have ample time to implement what they learn and discuss the use of new practices with their peers.

All in all, the focus of the training seems to be more traditional, focusing on "teaching skills based on research on how students think about mathematics," rather than on processes that will create change in the mathematics classroom.

2. Is the professional development program grounded in national and state math content and teaching standards?

Although the training materials do give a very broad overview of both state and national standards, this professional development seems somewhat dated. Much of the material seems to be based on the 1989 NCTM Standards with the K-4/5-8/9-12 bands instead of the more recent PK-2/3-5/6-8/9-12 bands of the Principles and Standards for School Mathematics.

The only NSDC standards addressed fall in the categories of process and content. The instructional strategies used in the presentation of materials (i.e., the process of how the professional development was conducted) are not addressed in the materials. The materials focus on mathematics content only. The professional development program is designed to deepen educators' content knowledge, providing them with research-based classroom instructional strategies (such as journaling, using manipulatives, promoting certain conceptual models for arithmetic operations, making connections with children's literature, and teaching math meaningfully) to assist students in meeting rigorous academic standards.

3. Does the professional development program offer opportunities for teachers to become deeply immersed in math content and pedagogical content knowledge?

The focus of the program is to provide teachers with the opportunity to become deeply immersed in math content and pedagogical content knowledge. I learned much reading the materials and wanted to try certain activities or techniques with kids. The materials provided give participants research, history, and information to deepen their understanding of the mathematics and strategies for teaching meaningfully to promote understanding,

4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in math?

Some of the material covered is not aligned with the elementary mathematics TEKS, but does include some materials covered at the middle school level. The TEKS consider K-5 as elementary. This professional development seems to be designed for K-6 and focuses to a great extent on the content in the upper grades (i.e., many of the topics covered are actually aligned with middle school TEKS). Since the level of the mathematics and alignment with TEKS is not addressed in many parts of the professional development,

elementary teachers may believe they must develop these concepts in their classrooms. For example, identifying Least Common Multiples and Greatest Common Factors, Prime Factorizations (Fractions pp.11-112, TEKS 6.1D,E,F), Comparing and Ordering Integers (Fractions pp. 236-273, TEKS7.1A), and Measuring Angles (TEKS 6.8C) are addressed in middle school, not elementary, TEKS. Also, negative numbers are addressed in middle school, not elementary, but they are covered in the materials. The way I "read" the materials, I would not have known that these were middle school topics since they were not identified as such. The same is true of some of the specific activities used in the materials. Participants seem to be committing to take activities back to their classrooms that are not grade level appropriate. For example, a third grade teacher might commit to using activities such as "battleship" (TEKS5.9), and "angles" (TEKS4.8A, 6.8C). Without studying the grade level specific TEKS, it would be difficult for teachers to know what their students are expected to know and do.

The sections on Geometry and Probability and Statistics do provide the state standards so teachers have an idea of what the should know and be able to do, what they are responsible for helping their students learn, and how this connects to future standards. For the Probability and Statistics strand, a list of appropriate topics per grade level as well as the grade level description of the TEKS topics is included. However, this was not the case for most of the strands. Even when the TEKS for Geometry were given, it was unclear how to connect the fun, exploratory activities with instruction for particular, grade-specific learning goals (i.e., the TEKS).

In general, TEKS are not explicitly addressed in most of the content of this professional development. Only two days (of the seven day training) outline the TEKS associated with the topics of the day. While it is important for all teachers to know the typical progression of a child's mathematics development so that they know how what they teach fits into the bigger scheme, they also need to concentrate on the grade-specific TEKS. The TEKS will help them understand what each child is expected to know and be able to do at each grade level, assisting in determining what is appropriate for their classroom and their students.

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

The Professional Development concentrates on quality teaching. It focuses on participants learning teaching skills. It includes a lot of wonderful research, teaching strategies, and activities. However, I do not find the materials coherent. The research, teaching strategies, and activities are not clearly connected. In addition, the participants seem to be teachers from K-6 (there is a very large difference between what is expected of a K versus 6th grade student) and the written materials do not typically make it clear what is appropriate for a particular grade level.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.				X
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.				X
• *Resources:* requires resources to support adult learning and collaboration.				X
Process Standards				
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.				X
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.				X
• *Research-based*: prepares educators to apply research to decision making.		X		
• *Design:* uses learning strategies appropriate to the intended goal.		X		
• *Learning:* applies knowledge about human learning and change.				X
• *Collaboration:* provides educators with the knowledge and skills to collaborate.				X
Content Standards				
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.		X		
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.		X		
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.				X

Table 2. Overall Strengths and Weaknesses of the PD training

	Strengths	Weaknesses
1	The 7-day professional development occurs over a period of several months, giving ample time for teachers to practice and discuss what they learn in the training. It consists of research-based instructional strategies and deepens the content knowledge and understanding of the participants. It provides insights into how students learn mathematics and gives suggestions about meaningful teaching.	The professional development is not directly tied to the TEKS. The K-6 focus may mean the participants do not understand what is appropriate for a particular grade level.
2	The professional development is rich in resources and tools. It provides example activities that teachers can take back and try in their classrooms as well as gives teachers insight into how students learn mathematics. Resources supplied help teachers make connections to Literature, foster communication by students, and provide models for developing number sense and reasoning. The professional development also provides ideas for linking concrete to symbolic. These help teachers with their tasks of portraying content and constructing learning activities.	The professional development does not address most of the NSDC Standards for Staff Development. It could be that when delivering, the developer actually does meet many of these standards but this is not reflected in the training materials that focus on content. Or, it may be that the training was developed before NSDC Standards.
3	The professional development asks participants to reflect and commit to implementing what they learn in their classrooms.	Materials seem somewhat dated. While resources do make mention of the NCTM Principles and Standards for School Mathematics, most of the materials relate to 1989 Standards.

References

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PROGRAM 4

TEXTEAMS
Rethinking Middle School Mathematics:
Proportionality Across the TEKS
Reviwer: Dr. Maggie Myers

Section 1. Training Description

TEXTEAMS Proportionality is a five-day professional development training. It uses a trainer of trainers model. The topics covered each day are as follows:

Day 1 introduces characteristics, language, and representations of proportional
    relationships and compares proportional and non-proportional relationships.
Day 2 explores the concept of a ratio as a way to describe proportionality and uses
    concepts of unit rates to solve problems.
Day 3 investigates proportional relationships in geometry.
Day 4 investigates proportional relationships in measurement and probability.
Day 5 investigates proportional relationships and percents and synthesizes the concepts
    developed in the training.

The training is conducted by investigating a few activities with a focus on in-depth understanding. The general approach is hands-on activities and discussions. Participants are asked to learn in the same way they are asked to teach.

Participants receive institute notes (activity lessons) that outline concepts covered, TEKS focus, an activity overview, materials needed, debriefing ideas, extensions, and assessments. In the margins of the pages, participants can find other TEKS addressed in the activity and math notes that are short discussions of the mathematics concepts being developed. The materials ask the participants to use multiple representations to help them and their students understand mathematical relationships in different ways. The materials make connections inside and outside mathematics through using hands-on activities that incorporate manipulatives and technology. Questioning strategies are provided to elicit communication and reasoning that deepens the level of understanding and proficiency. The materials also include graphing calculator keystroke instructions to increase the chances that participants will take the technology back to their classrooms.

The materials in the notebook are organized by day. A Table of Contents is provided in the beginning and the pages are numbered. Most days are broken into two units and tables outlining the activities, concepts and materials needed begin the sections. Transparencies and handouts follow institute notes. Next, answers and math notes for the questioning on the handouts can be found. In addition, to assist in reflection and deeper thinking, the materials include Reason and Communicate question and answers. At the end of the each unit, there is a reflect and apply.

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of math?

The sections on new knowledge, skills, and understandings about teaching and learning in mathematics are grounded in research.   The training reflects proportional reasoning as the big idea in middle school mathematics. While research is not quoted, the materials reflect the research on how students understand fractions, ratios, and proportions found in Noelting, G. (1980), Lamon, S. J. (1999), and National Research Council (2001).

Proportional reasoning is formally introduced in middle school. Proportional reasoning in the research has been described as the capstone of elementary school math and the gateway to higher mathematics. The conceptual aspects of proportionality play out in three types of problems:

1) Missing value (e.g., If the price of balloons is 3 for $2, how much will a dozen cost?)
2) Numerical Comparison (e.g., Which costs more: 3 balloons for $2 or 4 balloons for $3?)
3) Qualitative Comparison (e.g., What happens to the price of a balloon if you get more balloons for the same price?)

Traditionally, instruction has focused primarily on missing value and to a lesser extent on numerical comparison. On the 1996 NAEP, only 12% of eighth-grade students could solve a problem on comparing two rates. So proportional reasoning is a crucial problem for middle school instruction, and research suggests professional development should focus on crucial problems.

Traditionally, instruction moves to a cross-multiplication algorithm without attending to the conceptual aspects of proportional reasoning, creating difficulties for students. Research suggests that conceptual development can be supported "through exploring proportional (and non-proportional) situations in a variety of contexts using concrete materials or situations where students collect data, build tables and determine the relationships between the number pairs (ratios) in the tables." Activities throughout the training do exactly this. For example, Day 1 introduces characteristics, language, and representations of proportional relationships and compares proportional and non-proportional relationships by asking the participants to collect data, build tables, graph results, and determine relationships for proportional and non-proportional situations in different contexts (for example, ski rental).

2. Is the professional development program grounded in national and state math content and teaching standards?

The professional development is dated. I believe NSDC standards came into existence after this program was developed. The program does not address all of these standards, such as family involvement. (See part 3 below)

It does reflect other national and state standards. In fact, all of the activities are TEKS focused. Both focus TEKS and others addressed are specifically referenced in the materials for each activity. However, the TEKS have been updated this year and the training materials refer to the older version. While not specifically mentioning the national standards, the materials reflect both middle school content and process standards of the NCTM's Principles and Standards for School Mathematics (PSSM).

All of the content standards on proportional reasoning are addressed in the professional development. For example, in geometry, the PSSM content includes:
   a. solve problems involving scale factors, using ratio and proportion;
   b. solve simple problems involving rates and derived measurements for such attributes as velocity and density.
Activities in Day 3 ask participants to investigate these.

As for process skills identified in the PSSM, participants are continually asked to problem solve, communicate their thinking, make connections, reason, and represent in multiple ways.

3. Does the professional development program offer opportunities for teachers to become deeply immersed in math content and pedagogical content knowledge?

The focus of the program is to provide teachers with the opportunity to become deeply immersed in math content and pedagogical content knowledge. Math notes bring out content, and the entire approach of the program is to develop pedagogical content by asking teachers to participate in adult learning that reflects the same ways they will be teaching.

4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in math?

All of the activities are aligned with TEKS. Each activity has focus TEKS (which provide the main objective of the activity) and then, if during the activity other TEKS are addressed, they are referenced in the margin. Both focus TEKS and other TEKS addressed are specifically referenced, and all appropriate TEKS are addressed. All of the learning goals have a proportional relationship focus, and many of the middle school TEKS in all content strands touch on proportional reasoning.

For example, in the Geometry strand:

> (8.6) **Geometry and spatial reasoning.** The student uses transformational geometry to develop spatial sense. The student is expected to:
> (A) generate similar figures using dilations including enlargements and reductions;

 is addressed in the training.

However, in the Probability and Statistics strand:

> (8.13) **Probability and statistics.** The student evaluates predictions and conclusions based on statistical data. The student is expected to:
> (A) evaluate methods of sampling to determine validity of an inference made from a set of data;

is not addressed.

All of the process skills are also addressed and are identified in the margins. Since proportional reasoning is a big idea in middle school mathematics, most of the TEKS are directly addressed. A strength of this professional development is that it is very TEKS focused and based.

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

The professional development concentrates on quality teaching. The training promotes active learning and collective participation. It is coherent and conceptual, asking participants to reflect on their practice and to learn in the same way they are expected to teach. The professional development uses a trainer of trainers model so many presenters can use the same materials to provide the training.

The NSDC Context standards are not explicitly addressed outside of the training. However, the trainers become (or are) local leaders, so in some ways this model does support the development of local leadership. The materials did not detail how these leaders can provide guidance for continuous instructional leadership. Also, I am aware that some local communities use outside consultants as presenters. During the training, participants are organized into learning groups, but how this extends as teachers go back to the classroom is not addressed. Because the training focuses on math content rather than specific data, the degree to which the Process standards are addressed is not always clear. The design standard is fully addressed, since the goal of the training is to deepen educators' content knowledge with active learning, using the same methods that students in the classroom will be expected to use. The equity standard (in the Content category of NSDC standards) is only partially addressed, since there is no information concerning the attention given to maintaining orderly and supportive learning environments. The issue of maintaining order and controlling environmental aspects in their classrooms is a major concern for many teachers, and lack of attention to this concern may negatively affect the achievement of lasting changes in the classroom (Kennedy, 2005). The training fully

addresses the quality teaching standard. No information on family involvement was included in the review materials.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.		X		
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.		X		
• *Resources:* requires resources to support adult learning and collaboration.		X		
Process Standards				
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.				X
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.			X	
• *Research-based*: prepares educators to apply research to decision making.			X	
• *Design:* uses learning strategies appropriate to the intended goal.	X			
• *Learning:* applies knowledge about human learning and change.		X		
• *Collaboration:* provides educators with the knowledge and skills to collaborate.			X	
Content Standards				
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.		X		
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.	X			
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.				X

Table 2. Overall Strengths and Weaknesses of the PD training

	Strengths	Weaknesses
1	The professional development consists of research-based instructional strategies and deepens the content knowledge and understanding of the participants.	The training may or may not be offered over an extended period of time. It may or may not employ skillful school and district leaders who guide continuous instructional improvement. While it organizes adults into learning communities during sessions, mechanisms for lasting collaboration are not addressed.
2	The professional development is directly tied to the TEKS. Activities are developed from the learning goals of targeted TEKS, and other TEKS are directly mentioned in the margins of the materials if they are addressed in an activity. It is consistent with goals, standards, and assessment.	The professional development does not address all of the NSDC Standards for Staff Development. It could be that when delivering, the presenter actually does meet many of these standards, but this is not reflected in the training materials, which focus on content.
3	The professional development models "less is more," and integrates the use of activities that can be taken back into the classroom with adult learning. It uses active learning and asks participants to learn in the same way they are expected to teach.	The contexts for training delivery are not addressed. While the training was designed for flexible delivery of consistent content across the state, it does not take into account variations in needs and leadership in different districts.

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Bridging II TAKS Module 2: Light and Optical Systems
Reviewer: Dr. Suzanne Stiegelbauer

Section 1. Training Description

The Bridging II TAKS Module, Light and Optical Systems, is a binder of teacher curriculum materials for elementary grades 1 – 5. The materials clarify and combine information from the Texas TAKS, TEKS, PASS (Promoting Academic Success in Science), Safety First Alert Icons, interdisciplinary connection Icons, and suggested Classroom settings Icons. It also uses the 5E's – Engage, Explore, Explain, Elaborate, and Evaluate – as the instructional strategy. First of all the binder is a teacher resource, combining good practice in curriculum development and content, with how students learn, and with ways to support student learning through connections to other subjects. One of the positives of the binder presentation is the use of visual icons throughout to alert the teacher to safety, interdisciplinary issues, materials needed, or other suggestions as sidebars to the curriculum plans. This allows the teacher to be reminded about important considerations in a brief and user-friendly way.

The <u>Module Introduction</u> is in three sections:
- The first provides a brief explanation about TAKS and expectations related to items that might appear on the TAKS test. This information is presented in paragraph and chart form.
- The second is a Key to Understanding the TEKS included on TAKS Elementary Science, describing the objective being discussed in terms of knowledge and skills it covers, expectations for students and important vocabulary cues that help teachers refine goals for students. This section provides examples of student questions and asks teachers to test themselves, then discusses the answer.
- The third section of the introduction returns to the TAKS and presents the objectives for elementary science with more information and guidance for teachers as to what each objective means and how to help students answer questions related to that objective.

The Module then presents <u>activities for grades 1 through 5</u> related to Light and Optical systems. Each grade level follows the same format:
1. Overview of grade level goal for light and optics
2. Table of Contents for unit
3. Interdisciplinary connections, presented as a diagram with suggested activities outlined
4. The 5 E's, with activities related to each
   a. Engage
   b. Explore
   c. Explain
   d. Elaborate

e. Evaluate
5. Materials required for each section of the activities
6. Background content information for teachers
7. Content area TEKS
8. Reading Connections
9. References and related readings and websites
10. Master Copies of student sheets and other materials

The <u>topics for grades</u> under light and optics are:
- Grade 1: magnificent magnifiers
- Grade 2: me and my shadow
- Grade 3: Star power
- Grade 4: nature's reflections
- Grade 5: reflecting on refraction

Each grade level becomes increasingly complex in types of activities and in the depth of use of the 5 E's. Older grades also make more use of group roles in predicting, describing and evaluating.

There was no information included with these materials as to how they were presented to teachers. As it stands, this is a teacher tool for self-development, though one that is thoroughly grounded in the TAKS and TEKS. Other than the introduction, this is a curriculum with activities and teaching strategies designed to address one area of TAKS questioning supported by targeted Science TEKS. TEKS information is clearly presented both for science and the interdisciplinary areas connecting to the science activities. In terms of the description of the PD training, based on the materials I have, there is no explicit training, other than the structure of the materials in the binder. That structure is well thought out, easy to use, and would help a teacher "learn as she goes."

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of science?

The module as presented is clearly written based on good practice in science and in terms of developmentally appropriate learning activities for children. It also carefully deconstructs the TAKS and TEKS expectations and presents them in a way that teachers can work toward those goals. In using the 5 E's as the instructional strategy, the activities follow the scientific method as it might be used in any context.

Science is based on moving from observing a natural process to testing and analyzing it to ensure understanding. Good professional development in science works the same way. Because of the need to "understand" phenomena from multiple perspectives (how to teach, what to teach, relating to TEKS goals, expectations for grade level, strategies for working with students, appropriate assessments), helping teachers develop themselves as science teachers includes the same strategies, here incorporated into use of the 5 E's and

the work they do with students. I was comfortable with the science materials presented as well as the activities and instructional strategy. The Module did not give me any information about how teachers would be supported in their use of this, other than the clarity of detail about the science activities themselves and the expectations of the TAKS and TEKS.

2. Is the professional development program grounded in national and state science content and teaching standards?

Again, other than the binder/module on light and optics outlining the curriculum and 5 E teaching strategy, I have no information about a broader context for this as professional development (i.e., how this was introduced to teacher and how teachers were supported in their use).

Based on the binder/module alone, the materials follow the processes outlined by the National Standards for Science Education (NSES) in containing activities that are based in scientific and inquiry processes, using appropriate to grade level procedures that involve students in actively exploring material, providing time and structure for discussion and group work, assessing understanding and sharing responsibility for learning with others. The activities in the module are based on state and national science standards, the Texas TEKS and TAKS, and follow the standards based requirements for science content in this area. In the introduction, the TAKS and TEKS are outlined and described in relation to how teachers should be working with the material to make it science based and improve outcomes in science.

In relation to a professional development strategy, the binder/module itself requires teachers to learn as they do. In the absence of information about a more explicit longer term PD strategy, my comments are based on the binder/module alone. The NSDC standards addressed by the module are primarily about process and content. Teachers are facilitated in appropriate activities related to a specific science content and through the 5 E's are shown a process for students (and implicitly themselves) that helps develop science understanding and skills. Some resources are provided in the module materials, but the standards of collaboration, leadership, family, learning community, data driven, etc. are not addressed in the materials received (see also Table 1 in section 3).

It would be helpful to know more about how this was presented to teachers, expectations for use and supports to refine use. The research-based wisdom on effective PD in science is that it is embedded in a longer term inquiry-based process (Loucks-Horsley et al, 2003; Supovitz & Turner, 2000) that allows teachers to reflect on their own practice and work through problems of practice with peers and experts to allow for growth over time (Fullan, 2004; Gordon, 2004).

3. Does the professional development program offer opportunities for teachers to become deeply immersed in science content and pedagogical content knowledge?

The activities in the binder/module immerse teachers and students in a well-grounded science based content and instructional method. Teachers learn from trying out the activities and reading the enclosed material about TEKS and TAKS objectives. They can extend their knowledge by reading suggested articles or web sites included in the bibliography at the end of each grade level section.

4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in science?

The activities in the materials are designed around specific TEKS objectives for grade levels 1 – 5. The TEKS are a major focus of the introduction, which includes a guide for teachers to decode TEKS objectives in terms of knowledge and skills addressed and student expectations. Nine pages of the introduction are spent discussing the TEKS objectives in science, with sample questions and discussion of activities related to each (at the fifth grade level). TEKS objectives related to interdisciplinary activities (objectives in language arts, social studies, mathematics, arts, and physical education) are also presented as part of each grade level unit. Each grade level unit also presents the TEKS objective related to light and optics and describes it in terms of the 5 E processes to an outcome that meets the objective. The focus of this module is to address the TEKS and with it TAKS questions and to build knowledge and skills in students such that they can achieve TEKS learning goals and do well on the TAKS.

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

While this is a form of professional development, and a quality product for what it is, I would not call it, on it's own, high quality professional development. This may be due to a lack of information about the context in which this module was introduced to teachers. High quality professional development would include some or all of the following:

- Is based on participants perceptions of student or self-needs;
- Participants are involved in planning, delivering, and evaluating;
- Participation is voluntary but expectations are high;
- Training is long term, allowing incremental skill development;
- Trainers utilize participant expertise, prior knowledge, beliefs and professional roles;
- Activities include demonstration of new skills and feedback on performance;
- Training is flexible, allowing for participants' evolving perceptions and concerns;

- Training is part of a larger program that includes other professional development frameworks intended to assist in the transfer of new skills and understandings to the classroom (Gordon, 2004).

Gordon concludes: "effective training, then, must include strategies for helping trainees to discover their need for skill development, then develop mechanical competence, …and finally the ability to articulate and teach their skills to others (2004, 37). He describes a "cone of experience" for professional development that moves through a process of demonstration, discussion, participant presentation, participant review or judgment of each other's work, to problem-based strategies, and finally to designing and administering new skills they will perform in actual practice. Susan Loucks-Horsley et al reinforce this concept in their book on *Designing Professional Development for Teachers of Science and Mathematic*s (2003) in describing ways that change in practice can be supported by mentoring and peer support over an extended period of time. Crucial to both Gordon and Loucks-Horsley is the theme of developing expertise over time with immersion experiences, reflection and feedback. Good practice does not come with a manual.

Based on what teachers of science will need to know and do to effectively implement the National Science Education Standards, the Standards for Professional Development for Teachers of Science (NSES), suggest the following:

- Learning essential science content through the perspective and methods of inquiry involving teachers in actively investigating phenomena, interpreting results, making sense of findings consistent with currently accepted scientific understanding, including discussing, reflection and collaboration in learning.

- Integrating knowledge of science, learning, pedagogy, and students and applying that to science teaching.

- Building understanding of science and the ability of participants to engage in lifelong learning through feedback on work and sharing of expertise.

- Providing programs for teacher of science that are coherent and integrated with clear goals, practice, collaborations, and programs assessments.

Again, while the binder/module is well developed and does address some of these standards, the ability of participants to engage in lifelong learning through feedback and sharing of expertise is missing from the materials available for review. To be high quality professional development, the module would need to be part of a larger explicit strategy for deepening understanding and use, one that is sequential, sustained, and grounded in reflection, critique, and support. What is here is the information that might be the centerpiece of a professional development strategy, not the strategy itself, with the exception of teacher self-instruction.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.				X
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.				X
• *Resources:* requires resources to support adult learning and collaboration.				X
Process Standards				
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.				X
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.				X
• *Research-based*: prepares educators to apply research to decision making.		X		
• *Design:* uses learning strategies appropriate to the intended goal.	X			
• *Learning:* applies knowledge about human learning and change.	X			
• *Collaboration:* provides educators with the knowledge and skills to collaborate.				X
Content Standards				
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.		X		
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.	X			
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.				X

As mentioned before, as this review is based only on the paper materials for teachers, no information on context and support is present. As a result, there is no information on the *context* standards and little information about some of the *process* and *conten*t standards.

The NSDC standards most explicitly addressed are: *quality teaching* (all described in the standard summary are addressed), *design* (the 5 E instructional strategy), *learning* with some evidence of *research based* decision making, keeping a safe environment and high expectations under *equity,* though no mention of differing needs of students as described in the equity summary.

To review, these are good materials, well written and user friendly. The context of how teachers acquire them and are supported in using them is missing.

Table 2. Overall Strengths and Weaknesses of the PD trainings

	Strengths	Weaknesses
1	User-friendly module outlining activities based on TEKS and TAKS goals for 5 grade levels on light and optics. Activities link to interdisciplinary possibilities, show needed materials to set up lessons, and alert to safety issues.	No discussion of context. How is this to be used by teachers? What support will they get? Do they see a model of a sample activity? How is this part of a longer-term strategy to improve science teaching?
2	5 E's as an instructional model works for both teachers and students in that it provides a process based on the scientific process itself that guides and tests learning. As teachers follow that process they can apply it to other settings.	No discussion of how teachers might help each other learn to teach science (collaborative inquiry).
3	Clear outline of expectations for TAKS and TEKS and discussion of how to think about working with them. Teachers learn about how TAKS and TEKS objectives and questions are constructed and how that relates to what they should teach.	No data on student or teacher need related to a start point for the activities in the module. How would a teacher tailor this for different groups?

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PROGRAM 6

TEXTEAMS Biology Institute
Reviewer: Dr. Suzanne Stiegelbauer

Section 1. Training Description

This 5 day Biology TEXTEAMS Institute provides teachers with two examples of teaching Texas Essential Knowledge and Skills (TEKS) for Biology. Science teaching experts facilitate this Institute. Three days are spent on Biology concepts and applications to TEKS and two days are spent on understanding and developing appropriate assessment strategies.

Topics by day	Materials & Resources	Organization of materials	Approach taken	Participant Activities
Day 1 •DNA: Types of activities •A walk through Biology TEKS •Biological Evolution •Biology Vista Day 2 •Biology Vista •Mechanisms of Genetics Day 3 •Mechanics of Genetics •Phasing Day 4 •Developing Meaningful Assessments •Assessments related to standards & instruction Day 5 •Assessment methods and applications	•PowerPoint presentations and handouts •Teacher worksheets •Materials for teachers to complete sample activities •TEKS overview •Student samples •Blackline masters for teacher and student work •Assessment samples •Physical materials for experiments	•Introduction & Overview •Relation to TEKS •Major concepts •Activities based on major concepts •Relationship to students and curriculum •Relationship to assessment •Reflection and Processing	•Facilitators present concepts and models •Teachers work with a sample activity related to concepts •Teachers relate their experiences to student work •Teachers discuss and develop appropriate assessment strategies	•PowerPoint overview of process and major concepts •Reading articles related to topic •Group work on topic based activities •Individual development of assessment materials •Reporting back to group (reflection)

Discussion

The Biology Institute walks attending teachers through major concepts and sample activities related to the TEKS at different grade levels. Included in general topics are: understanding teaching approaches through thinking about DNA, a walk through the Biology TEKS, how to "phase" student experiments, principles of biological evolution, the mechanisms of Genetics, meaningful assessment strategies related to teaching biology and their relationship to standards and instruction, as well as work with teachers to develop or refine their own tests and assessments.

The Biology Institute consists of five days. On each day teachers receive an overview of the major concepts to be worked with that day as well as time to work through sample activities related to those concepts as a model for work with students. Each day ends with reflection and discussion. Days one through three are concerned with Biology concepts and their relation to the TEKS. Day four presents an overview of vista development and other assessments. Day five addresses assessment methods and sample questions, national and local standards, TEKS, and asks teachers to develop their own assessments as part of the day's task. The general strategy for the presentation is intellectual (in-depth information about a concept), conceptual (how to work with a concept), practical (practice activity samples), and meta-cognitive (reflection and group discussion). The process strategy for the Institute proceeds from presenter to individual to small and whole group work with attention to application. A major feature of the Institute is its emphasis on the Biology teaching strategies related to TEKS, assessment, and appropriate test questions (i.e. questions that truly test the student's knowledge of the subject). All days of the Institute are intensive, requiring focused work on the part of participants.

Outline of Days: Topics covered

Day One
Overview of TEXTEAMS Biology Institute
Teacher Learning: Thinking about DNA, difference between student tasks related to:
      Enactive tasks
      Iconic tasks
      Symbolic tasks
A walk through Biology TEKS, teacher review of knowledge statements and student
    expectations for grades 6 – 10
Teacher Learning: Investigations
      Laboratory and Field norms
      Texas safety standards
      Animal safety
Biological Evolution Vista based on TEKS
Teacher Learning: Teaching Biological Evolution
      Article from National Science Teachers Association
      Teacher concerns about evolution
      Activity: Natural selection

Activity: Change by chance
Activity: Electrophoresis
Activity: Evolution terminology
Activity: Lost Diversity of Easter Island
Reflection and recap of day, check TEKS addressed

Day Two
Biological Evolution Vista (con't)
       Activity: Arthropods
       Activity: What a beak
       Activity: Best Bess beetles
       Activity: Nailing evolution
       Activity: Bear branch
Assessment tasks
       Cats and Birds
Mechanism of Genetics
Teacher Learning
       Relation to TEKS and TAKS
       Assessment task: Sickle Cell Anemia
       Activity: Fundamentally Genetics
       Activity: Dominant Fly
       Activity: DNA in news (discussion)
Reflection and recap of day

Day Three
Mechanisms of Genetics (con't)
Teacher Learning
       Review of assessment task
       Activity: DNA and proteins
       Activity: Protein synthesis
       Activity: Human Genome
       Assessment task: Inheritance of Sickle cell
Phasing – student laboratory experiences
       "Cookbook" labs
       Student creations for collecting and communicating data
       Scenarios
       Real world problems
       Activity: practice writing science scenarios in groups of 2 or 3
Reflection and recap of day

Day Four
Vista development and Assessment overview
       Norms for assessment
       Professional teaching models
       National Science Standards
       Developing a Vista

Assessment task
What the research says about assessment
High Yield instructional strategies
Working on the work
Developing your own vista
Reflection and recap of day

Day Five
Purpose of Assessment: What do your tests TEST?
 A perspective:
  Meaningful learning
  TAKS
  Best Practice
  TEKS
  Data Analysis
TEKS focus
Assessment methods
 How are assessment chosen?
 Statewide/district/classroom assessments
 Selected response tasks: Good/poor question types
Criteria for selected response tasks
 Types of questions for item developer
Test preparation
Teacher learning: write your own appropriate assessments
Reflection and recap of day

Materials, resources, approach, and activities

Materials and resources
Teachers are provided with the following materials in the course of the Institute:
 Paper articles to read
 Paper copies of PowerPoint presentation outlining the day and presenting major concepts
 Materials and structure for sample activities
 Physical environment condusive to activities
 Structure for individual and group work
 Physical materials (microscope, computer, and the like) needed for experiments
 TEKS outline
 Suggestions for web sites and written materials to provide more information

Approach taken in presenting
 Presentation of goals and major concepts addressed each day
 Modeling and mentoring specific activities
 Development of teacher understanding skills through
  ▪ Reading short articles related to topic or issue

- Using visual, written and hands-on work to deepen understanding following the suggested student format of iconic (visual), symbolic (reading and thinking) and enactive (doing) tasks
- Anticipating questions and concerns
- Working individually and in groups to conduct sample experiments
- Relating issues and experiments to TEKS and grade level expectations
- Providing time for discussion and reflection

Asking teachers to write reflections that are used to guide the next day's work

Types of participant activities

Visual presentation and discussion by science teaching experts (PowerPoint)
Taking notes from presentations
Completing charts relating learning to TEKS
Reading short articles
Working in small groups on experiments
Working individually
Writing comments and reflections on own learning and process for facilitators
Utilizing TEKS in planning and reflecting on work
Developing direct content (assessments) for own classroom

Section 2. How does the professional development program compare to "best practices" in teacher professional development?

1. Is the professional development program grounded in research and clinical knowledge of teaching and learning in the field of science?

Science is based on moving from observing a natural process to testing and analyzing it to ensure understanding. Good professional development in science works the same way. Because of the need to "understand" phenomena from multiple perspectives (how to teach, what to teach, relating to TEKS goals, expectations for grade level, strategies for working with students, appropriate assessments), this Institute has embedded a similar process in its approach to professional development. Teachers are presented with concepts, allowed to discuss and experiment with them, then apply their understandings to the TEKS goals and working with students. Teacher knowledge is developed in a variety of ways: listening, seeing, experimenting, relating and applying.

The content of the Institute is based on the Biology TEKS and research on assessment strategies. Information presented to teachers is either directly drawn from the Biology TEKS, or from research on assessment and standards. The Institute uses scientific methods for data collection and analysis, much of which requires participants to be aware of methods for specific issues, such as measuring DNA samples or comparing genetic material.

2. Is the professional development program grounded in national and state science content and teaching standards?

The training materials make frequent reference to National Science content standards, as well as State and Local standards. The materials also provide web site information about where more information about standards and individual topics can be found.

The Institute describes and follows the processes outlined for teaching science by the National Standards in Science (NSES). These include: 1) focusing on the use of scientific and inquiry processes, 2) guiding students in active and extended scientific inquiry, 3) providing opportunities for discussion and debate, 4) continuously assessing understanding, and 5) sharing responsibility for learning with other learners. In the course of the five days participants are engaged in all of these processes with respect to the Biology samples and learning about assessment. Given the complexity of some of the tasks asked of participants and time limits, I have some concern about the ability of some participants to absorb the information such that they can actively apply it, given their backgrounds.

In terms of quality professional development for science teachers, Loucks-Horsley et al (2003) remind us that professional development, especially in the sciences, is larger than the initial Institute. They recommend an inquiry process for teachers that includes such things as mentoring, immersion experiences (which the Institute addresses), action research, teacher directed study groups, and lesson studies, all of which are addressed to a continuous learning process with peer or mentor support. Supovitz and Turner (2000) as well as Radford (1998) report on large scale research supporting an ongoing inquiry process as effective in enhancing the relationship between professional development, teacher practice and student outcomes. While the Institute is strong on immersion and teacher support within its five days, it does not, in the outline reviewed here, provide a plan of support and refinement for teachers.

3. Does the professional development program offer opportunities for teachers to become deeply immersed in science content and pedagogical content knowledge?

The Institute involves teachers with specific science content and the review of that content in terms of the TEKS, TAKS, and appropriate assessments in an active way, asking them to conduct experiments and develop materials related to student learning. It does this only as samples, however, allowing them to use these as models for work with other areas of science content. Teachers complete approximately 20 activities related to science learning and teaching science at different levels. They apply their learning within the Institute through discussion and reflection on the process for students.

4. Are the PD materials aligned with the Texas TEKS for the appropriate grade level(s) in science?

The Institute provides the Texas TEKS objectives for the sample science content used as models for teachers. TEKS are also used when working with appropriate assessment strategies.

TEKS are specifically utilized in:
- Day one, a walk through Biology TEKS, which provides participants with TEKS goals for grade 6 – 10 (6.11, 7.10, 8.11, /bio 6 & 7 respectively) and asks teachers to analyze and evaluate the progression of grades 6 – 8 and Biology knowledge and skills statements and student expectations.
- Day one asks teachers to examine the TAKS related to Biological evolution and provides the position statement for the teaching of evolution from the National Science Teachers Association.
- Days one, two and three learning experiences all draw teachers' attention to their focus on TEKS related skills as well as TAKS (see facilitator descriptions for learning activities)
- Teachers are provided with a TAKS and TEKS correlation chart for the Mechanisms of Genetics Vista

Section 3. Concluding Summary Remarks: Does the Professional Development Program Meet Your Standards of High Quality Professional Development?

I found the Institute full of interesting material, some of it quite challenging. It made me wonder about the training of science teachers and whether students could do the work at the level it is presented in the training materials. It would be quite a challenge to work through the activities without a capable Science teaching specialist, and without having the activities set up, practiced and ready to go. A lot of material is presented each day. The paper materials I received did not tell me about the context and whether the Institute went over a week or was conducted with breaks in-between. Given the complexity of some of the learning, I was intrigued to know about the complexity of the tasks for students and how teachers approached it in an eighth grade classroom, in reality.

In terms of the process within the Institute itself, it follows much of what the Standards for the Professional Development of Teachers of Science (NSES) suggests, based on what teachers of Science will need to know and do to effectively implement the National Science Education Standards, (with the possible exception of the third item below):

- Learning essential science content through the perspective and methods of inquiry involving teachers in actively investigating phenomena, interpreting results, making sense of findings consistent with currently accepted scientific understanding, including discussing, reflection and collaboration in learning.

- Integrating knowledge of science, learning, pedagogy, and students and applying that to science teaching.

- Building understanding of Science and the ability of participants to engage in lifelong learning through feedback on work and sharing of expertise.

- Providing programs for teachers of science that are coherent and integrated with clear goals, practice, collaborations, and programs assessments.

In the ideal the Institute would be embedded in a more comprehensive strategy for Professional development, one that provides sequential learning over time, feedback, mentoring and modeling, and discussion with peers. Gordon (2004, 34) describes teacher "training that empowers" as having some of the following characteristics:

- Based on participants perceptions of student or self-needs
- Participants are involved in planning, delivering, and evaluating
- Participation is voluntary but expectations are high
- Training is long term, allowing incremental skill development
- Trainers utilize participant expertise, prior knowledge, beliefs and professional roles
- Activities include demonstration of new skills and feedback on performance
- Training is flexible, allowing for participants' evolving perceptions and concerns
- Training is part of a larger program that includes other professional development frameworks intended to assist in the transfer of new skills and understandings to the classroom.

Gordon concludes: "effective training, then, must include strategies for helping trainees to discover their need for skill development, then develop mechanical competence, …and finally the ability to articulate and teach their skills to others (2004, 37). He describes a "cone of experience" for professional development that moves through a process of demonstration, discussion, participant presentation, participant review or judgment of each other's work, to problem-based strategies, finally to designing and administering new skills they will perform in actual practice.

Gordon's ideas align with those of Susan Loucks-Horsley et (2003) in describing the necessity of ongoing support for teachers, especially inquiry-based support through mentoring and teacher groups, that continues to challenge teachers to go deeper with the information presented in curriculum materials and professional development. The Institute has laid the groundwork for this in providing strategies for teachers to work with students; however, the Institute materials do not describe how teachers will continue to learn once the Institute is completed.

The NSDC Standards ask professional development efforts to incorporate research, instructional and teacher learning strategies, collaboration, knowledge of student group and level, with quality teaching that addresses both the needs of students and the needs of the subject matter. In providing an in-depth look at science content and how to work

with it with students, the Institute models what an approach to science might look like. In providing experience with science-based content, it also models for teachers how students could and should work with the material. It seems to assume, however, that all the teachers attending are the same and have the same needs.

The Biology Institute, while following the general approach of science learning, in general addresses many of the tenets of good professional development, with the following exceptions. These exceptions are possibly due to the outline materials submitted for review lacking information and context:

- It is unclear as to whether follow-up or an ongoing program of science teacher learning is an integral part of the Institute;
- It is unclear as to whether teachers' needs and knowledge level was assessed previous to the Institute, or whether different knowledge levels were utilized as part of the Institute;
- It is unclear as to whether the days of the Institute followed one upon the other (i.e. a week of days) or whether there was a time period between Institute days where teachers could practice what they learned;
- It is unclear as to whether teachers will receive any support once they return to their classroom in applying and assessing their use of new information.
- It is unclear as to the nature of the facilitators (other than as science "experts" or expert teachers) in terms of their relationship to the teachers and ability to support longer-term needs;
- It is unclear as to the overall strategy for Professional Development in Science teaching and where this Institute fits in that strategy.

Overall, the Biology Institute is comprehensive, engaging in its process, and a good learning experience for Science Teachers as it stands in the material presented for review. With ongoing conceptual, technical and practical support, (such as moving from the models presented in the examples to the real classroom and activities not presented in the Institute) it could have positive impact on Science teaching.

Table 1. Addressing NSDC Standards

NSDC Standards for Staff Development	Fully Addressed	Partially Addressed	Not Addressed	No Information
Context Standards				
• *Learning Communities:* organizes adults into learning communities whose goals are aligned with those of the school and district.	X			
• *Leadership:* requires skillful school and district leaders who guide continuous instructional improvement.				X
• *Resources:* requires resources to support adult learning and collaboration.	X			
Process Standards				
• *Data-Driven:* uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement.				X
• *Evaluation:* uses multiple sources of information to guide improvement and demonstrate its impact.		X		
• *Research-based*: prepares educators to apply research to decision making.	X			
• *Design:* uses learning strategies appropriate to the intended goal.	X			
• *Learning:* applies knowledge about human learning and change.		X		
• *Collaboration:* provides educators with the knowledge and skills to collaborate.	X			
Content Standards				
• *Equity:* prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement.		X		
• *Quality Teaching:* deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.	X			
• *Family Involvement:* provides educators with knowledge and skills to involve families and other stakeholders appropriately.				X

Comment: The NSDC standards table above was answered based on what was presented in the paper materials for the Institute. Some of the standards may have been addressed in discussion, or were not relevant to the Institute setting.

To take each of the NSDC strands, in terms of *contex*t standards, the Institute did organize participants into learning groups and provide resources appropriate to adult learning and collaboration. The leadership for the Institute beyond leadership for the PD days was not clear or not required for the Institute. The *processes* used in the Institute were research based in terms of the science materials presented and the general process for professional development within a specific event: the Institute used learning strategies appropriate to the intended goal, applied knowledge about human learning and provided

participants with opportunities to collaborate. In relation to *content*, it did provide models of quality teaching and working with students. It did not address the family, and while it discussed safety, an important consideration to science experiments, as well as high expectations, it did not go beyond to other student needs with the exception, perhaps, or some of the assessment discussions. In reality, much was presented in the Institute's five days. Likely what was presented was almost more than could be absorbed. The strength of the Institute in terms of outcomes will depend on how teachers use the information once they return to their classrooms.

Table 2. Overall Strengths and Weaknesses of the PD trainings (Biology Institute)

	Strengths	Weaknesses

1	Presentation of goals and major concepts addressed each day
	Modeling and mentoring specific activities
	Development of teacher understanding skills through
	  • Reading short articles related to topic or issue
	  • Using visual, written and hands-on work to deepen understanding following the suggested student format of iconic (visual), symbolic (reading and thinking) and enactive (doing) tasks
	  • Anticipating questions and concerns
	  • Working individually and in groups to conduct sample experiments and tasks (approx. 20)
	  • Relating issues and experiments to TEKS and grade level expectations
	  • Providing time for discussion and reflection
	Asking teachers to write reflections that are used to guide the next day's work
		Materials reviewed are unclear as to the overall time frame and support provided to teachers as part of a comprehensive Professional Development strategy.
		
		No obvious long term support and coaching for application
		
		No clear follow up
		
		No clear long term strategy for professional development in science teaching
		
		No obvious assessment of teacher needs and skills prior to attending the Institute
		
		No information about how the Institute would utilize the skills of more expert science teachers attending, or develop skills of less experienced, other than group work and presentation of materials

2	Learning essential science content through the perspective and methods of inquiry involving teachers in actively investigating phenomena, interpreting results, making sense of findings consistent with currently accepted scientific understanding, including discussing, reflection and collaboration in learning. Integrating knowledge of science, learning, pedagogy, and students and applying that to science teaching Relating issues and experiments to TEKS and grade level expectations	Relevant but fairly technical activities that require expertise in setting up and discussing; requires Science and teaching expertise Complexity of content raises concern that even a five day time period may not provide enough time for practice and using new information. Even the assessment days could be challenging for some teachers in developing good questions based on models. Some teachers may be overwhelmed

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