



EXECUTIVE SUMMARY

Overview

In June 2004, the Texas Education Agency (TEA) commissioned an independent study to evaluate three specific statewide initiatives to provide targeted teacher training, and ultimately improve student achievement. The Teacher Reading Academy (TRA), the Teacher Mathematics Academy (TMA) and Science Teacher Quality Grants were a component of the state's Student Success Initiative (SSI), a concerted effort by the Texas Legislature to improve student performance.

This study addresses several important evaluation questions, each related to the overriding issues of whether or not the programs were effective in improving student achievement and efficient in their use of state funds. Below are the major conclusions of this study.

- Based on statistical analysis, on-site observations and survey results, the TRAs were consistently effective, while the TMAs showed mixed results.
- Both academies were basically sound from a content standpoint, and were cost-effective on a cost-per-participant basis when compared against industry standards and similar training programs in other states. However, the TMA was not delivered as effectively as the TRA.
- A positive statistical relationship between teacher participation and lower teacher turnover was found to have existed in the TRAs, particularly for African American teachers. The State Board of Educator Certification estimates that teacher turnover costs Texas between \$329 million to \$1.2 billion annually.
- Both academies, if reinstated, could be improved in terms of instructional content, delivery methods, program support, and cost efficiency.
- Participation and cost data were not tracked in a manner that allowed online teacher training programs to be fully evaluated.

The Science Teacher Quality Grants program is in its first year of training delivery. Accordingly, the evaluation was limited to an assessment of the program structure, delivery mechanisms, and suggestions for ongoing program evaluation.

It is important to place these conclusions in the context of key program characteristics and differences. The TRA was implemented for four consecutive years with similar financial commitments by the state

each year. The program continued in the fifth year but with substantially reduced funding. The TMA was implemented for two years, but second year program funding was not available to support the full implementation of the next grade level academy. Texas school teachers and administrators perceived the state's commitment to the reading academies as stronger than its commitment to the mathematics academies, and this in turn appeared to strengthen their own resolve to implement and realize benefits from this program. In short, teachers and administrators more enthusiastically implemented a program in which the state had demonstrated a consistent and longer term commitment.

Further, attainable benefits—and flaws—of teacher training programs cannot be completely identified unless the program has been implemented for a time period long enough to provide a meaningful pattern of results. Of the three programs evaluated, only the TRA was implemented for more than one year at a consistent funding level. The TMA, first delivered in the summer of 2002, was not fully implemented before funding was discontinued. With state funding no longer available, the manner in which these academies were delivered in subsequent years changed and teacher participation dropped markedly. The Science Teacher Quality Grants have not been fully implemented and have, therefore, been evaluated differently than the TRA and TMA. These issues notwithstanding, this evaluation report provides a useful assessment tool and specific recommendations for the Texas Education Agency and the State Legislature to consider should any of these programs be reinstated, continued, or expanded.

The vast majority of the teacher training provided through the reading and mathematics academies occurred during the summer months. This is important in several respects. First, training occurred outside the teacher contract period. To promote participation, both academies started with daily stipends for participating teachers. This strategy worked, as teacher participation was initially strong, but dropped significantly in both academies after the funding for teacher stipends was eliminated. Second, because these academies occurred during the summer, they did not compete with other in-service training needs scheduled during the school year. The summer academies provided a focused, intensive, consecutive-day training on teaching strategies. However, both teachers and school administrators expressed a need for training and follow-up during the school year, closer to the moment of instruction. If these programs are reinstated, a combination of both delivery strategies would be more effective, but consideration should be given to the possible displacement of other important in-service training.

The remainder of this executive summary provides a historical overview of the SSI, a summary assessment of each program, and recommendations to improve their effectiveness and efficiency.

Introduction

Since the passage of the federal No Child Left Behind (NCLB) Act in 2001, all states have implemented programs designed to increase standards for student academic performance, particularly in the areas of reading, mathematics and science. This emphasis by the federal government on setting academic standards and benchmarking student performance has brought about changes in the way states develop academic curriculum, allocate financial resources, and implement professional development programs for teachers. However, even prior to the passage of NCLB, Texas made significant commitments to improve student achievement. During the 76th legislative session (1999), the Texas Legislature implemented the Student Success Initiatives (SSI) through Senate Bill (SB) 103.

The goal of the Texas SSI was to ensure that all students receive the instruction and support they need to be academically successful in reading and mathematics at their grade level. In particular, the following requirements, measured by student performance on the Texas Assessment of Knowledge and Skills (TAKS) tests, were established to ensure that students would meet grade level standards before being promoted to the next grade level:

- Students must pass Grade 3 TAKS in reading, beginning in 2002 – 2003;
- Students must pass Grade 5 TAKS in reading and mathematics, beginning in 2004 – 2005; and
- Students must pass Grade 8 TAKS for reading and mathematics, beginning in 2007 – 2008.

To achieve these grade level standards, policymakers recognized the importance of providing teachers with the necessary tools and support to positively affect student achievement. One of the tools provided was professional development training that focused on research-based teaching strategies in content areas covered by the TAKS tests. Over the following five years, the state implemented three specialized teacher training initiatives: the Teacher Reading Academy (TRA), the Teacher Mathematics Academy (TMA), and Science Teacher Quality Grants.

The 76th Texas Legislature, with the passage of SB 472, provided TEA with emergency appropriations for the development of the first TRA, which emphasized scientifically-validated instructional practices in the teaching of reading. It was initially provided to Kindergarten teachers in the summer of 1999, and implemented in subsequent years for Grades 1 - 3. Grade 4 teacher training materials were also developed under the SSI initiative, but funding was not available to conduct the training. Since its creation in 1999, approximately 66,000 Texas teachers have received TRA training in one or more grade levels. A web-

based version of the TRA, the Online Teacher Reading Academy (OTRA), was also developed through this initiative and made available to Texas teachers.

The TMA was designed to address best practices in mathematics instruction. The TMA was initially developed for Grade 5 and 6 teachers, and was deployed in the summer of 2002. A mathematics academy for Grade 7 and 8 teachers was developed, but funding was not available to complete the training. Since the initiation of the TMAs in 2002, approximately 14,000 Texas teachers have received TMA training in one or more grade levels.

For both the reading and mathematics academies, TEA funded the development of academy training materials and the training of trainers. The agency provided additional grant funding to the Education Service Centers (ESCs) to administer the program and deliver the academy training to participating teachers. In order to encourage participation in the academies, teachers who attended three or four-day academy training sessions received stipends. Virtually all teacher training was conducted during the summer.

In 2002, Governor Rick Perry announced a plan to make science a top educational priority in Texas schools. In response, the 78th Texas Legislature (regular session, 2003) enacted a series of policies aligned with this plan that aimed to eliminate student performance gaps in science through enhanced professional development training for science teachers, higher academic standards for science education, and intensive science instruction for struggling students. In December 2003, TEA, in cooperation with the Texas Higher Education Coordinating Board (THECB), issued a Request for Proposals (RFP) for Type A Teacher Quality Grants, as designated by the federal NCLB Act of 2001, to achieve these policy goals. The Type A grants were awarded to grantees responsible for developing the course content for training modules in both mathematics and science. In February 2004, TEA and THECB issued an RFP for Teacher Quality Type B Grants, which were awarded to grantees responsible for using the training modules developed by the Type A grantees to train teachers in select low performing school districts. While the Type A training modules were developed prior to the completion of this study, the teacher training portion of the Type B grants has not been fully implemented.

Purpose of This Report

This report evaluates whether the TRA, OTRA and TMA programs funded through the Texas SSI met their original policy goals by addressing the following research questions:

- How do the reading and mathematics academies compare with best practices?
- How did the reading and mathematics academies impact classroom practices?
- How did the Texas professional development academies impact student achievement in reading and mathematics?
- How cost-effective were the reading and mathematics academies and are there opportunities to improve the cost-effectiveness of these programs?
- What impact did the Texas professional development academies have on teacher retention and movement among districts, campuses and grade levels?

Given that the Science Teacher Quality Grants have not been fully implemented, it is premature to assess their impact on student performance. However, this report does review the need for improving student performance in science in Texas, and provides some guidance to TEA and policymakers on how to more effectively implement and evaluate professional development models for science teachers across the state.

In order to adequately address each of the research questions for this study, the evaluation team applied a combination of qualitative, quantitative, and expert review methodologies. Specific elements of the evaluation approach included:

- **Statistical Analysis of Public Education Information Management System (PEIMS) data collected by TEA, TAKS test results, data collected by the Education Service Centers (ESCs), and school district survey data** to examine the impact of the reading and mathematics teacher training activities on student achievement (i.e., TAKS results and grade retention) and teacher retention;
- **Analysis of financial data** to assess the cost-effectiveness of the TRA, TMA, OTRA, and Science Teacher Quality Grant programs;
- **Expert reviews of academy training materials** to determine whether the TRA, TMA, and OTRA training materials reflect “best practices” in teacher professional development using national standards and recent research on teacher professional development;
- **On-site visits, teacher and administrator interviews, and focus groups with academy participants and non-participants** to observe the degree to which academy participants implemented what they learned in the training activities, and to assess the implementation and application of the academies’ objectives across campuses; and,

- **Surveys of both academy participants and administrators** to gauge perceptions regarding the perceived effectiveness of the teacher training activities and whether the training resulted in changes in classroom practices.

Specific findings related to the evaluation of the TRA, OTRA, and TMA are discussed in this summary, as well as an assessment of the need for the Science Teacher Quality Grant program and the impact of academy training on teacher retention. This summary concludes with a set of policy recommendations to enhance the quality and cost-effectiveness of the teacher training academies if they are reinstated in the future.

Evaluation of the Teacher Reading Academies

The evaluation of the TRAs showed positive results, which were consistent across all aspects of the evaluation (e.g., the expert reviews of training materials, statistical analysis of impact on student achievement outcomes and teacher turnover, teacher and administrator surveys, and on-site visits and classroom observations).

Positive Student Outcomes

When students' TAKS scores were analyzed using a statistical model, the results showed that schools with a higher percentage of teachers who participated in the TRA experienced:

- Higher overall student performance on the TAKS test at the passing standard;
- Moderately higher student performance at the commended level;
- A decreased need for accelerated (remedial) instruction;
- Lower percentages of students who were retained and not promoted to the next grade level; and
- Similar improved student achievement results for economically disadvantaged students.

Student outcomes for the OTRA could not be calculated due to the lack of a mechanism to track teacher participants.

Cost-Effective Approach

From 1999 to 2002, the state invested \$75 million in the TRA. Approximately \$17.8 million was incurred to develop and deliver training for the Kindergarten academy, \$20.6 million for the Grade 1 academy, \$18.2 million for the Grade 2 academy, and \$18.4 million for the Grade 3 academy. It should be

noted that these TRA expenditures have been adjusted to include in-kind and indirect costs that were not charged directly against the TEA grants by ESCs.

Overall, the costs to develop and deliver the TRA training materials to academy participants were lower than expected for this type of professional development program—ranging between \$1,100 and \$1,200 per academy participant over a four year period. These costs included the development of the content for the training materials, the cost of training the state trainers, the delivery of the training to teachers, and the stipends paid to teachers for participation during the summer months. When compared to similar professional development programs in other states, the cost to develop and deliver the TRA training in Texas compared favorably.

Teacher stipends accounted for approximately 50 percent of the total TRA cost. Teachers were paid \$150 per day for attending the four-day sessions outside their contract period. Program development costs represented approximately one-sixth of the total cost, while program delivery accounted for one-third of the total cost. It is important to note that once the funding for the teacher stipends was eliminated, teacher participation in the TRA dropped precipitously.

Neither cost data nor participation data was available for online training provided through the OTRA.

Favorable Reviews by National Experts

National experts on reading and professional development concluded that the TRA and OTRA training materials were grounded in research and exhibited nine of the twelve professional development standards recommended by the National Staff Development Council (NSDC). Among the strongest features of the TRA and OTRA training materials were the scope and sequence of reading materials across grade levels and the training's alignment with national staff development standards on design, learning, equity, and teaching quality.

Recommendations for improving the quality of TRA and OTRA training materials included: improving reading assessment tools, increasing student reading expectations at each grade level, and improving the ongoing evaluation of the TRA and OTRA training materials. The national experts also recommended that the TRA extend training opportunities to teacher participants throughout the school year rather than limit training to a finite four day session in order to provide greater opportunities for the introduction of new training topics, while continuing to reinforce basic teaching strategies for reading. For the OTRA, the experts recommended building in more opportunities to interact with peers and instructors, as well as

additional activities that engaged the participants in application, syntheses and evaluation of important ideas and techniques.

Positive Feedback from On-Site Observations

Fifty-four classrooms in ten Texas school districts were visited to interview teachers and administrators, and observe classroom practices. Education service centers recommended school districts to include in the review based on academy participation. Districts were then selected to reflect the diversity of the state in terms of size, location, and student demographics.

Information obtained from site visits and focus groups confirmed that academy participants consistently used several formal and informal diagnostic tools recommended by the TRA, such as the use of early reading instruments, when these diagnostic tools aligned with their previous teaching practices.

Classroom observations with TRA participants also indicate that these teachers have implemented a variety of the differentiated instructional techniques taught in the academies. TRA participants who were observed also provided ample opportunities for supplemental instruction to support struggling learners using strategies promoted in the TRA training materials such as the promotion of additional academically-focused classes, supplemental instructional time for individual students, reading-based mentoring and tutoring.

TRA participants, whose classrooms were observed for this study, easily implemented the TRA-promoted diagnostic tools and instructional strategies into their daily teaching practices due to three major factors. First, the TRA training modeled how to apply the teaching strategies in a classroom setting. Second, the teaching strategies and supporting materials were well designed and required little preparation time. Lastly, the TRA resource notebooks provided clear and comprehensive instructions for implementation.

Positive Teacher and Administrator Survey Results

Surveys of both academy participants and school administrators were conducted to obtain perceptions regarding the overall quality of the TRA and OTRA trainings, the factors that contributed to teachers' and administrators' decisions to participate in the academies, and whether the trainings resulted in changes in classroom practice. Overall, survey responses regarding the TRA and OTRA were very positive, indicating that teachers and school administrators felt that the TRA and OTRA provided valuable professional development experiences that were easy to implement in the classroom and resulted in improved teaching practices. Key survey findings were:

- Participants in the TRA and OTRA and campus administrators who responded to the survey indicated that the overall quality of the academies was “good” or “very good”. A higher percentage of respondents who participated in the face-to-face training rated the academy as “good” or “very good” (91 percent) compared to online academy survey respondents (82 percent).
- The vast majority of TRA participants who responded to the survey indicated that they received a stipend for their participation. Open-ended survey responses also suggested that the stipends were the best way to encourage teachers to attend the academies. However, when asked the extent to which a variety of factors influenced their decisions to attend the TRA, 44 percent of the respondents indicated that the availability of stipends strongly influenced their decision to attend the academy. Among the other factors that were considered influential were the teachers’ principals, district administrators, and state or district requirements.
- Most teachers rated their level of implementation of TRA teaching strategies quite high; the majority of respondents generally reported using the TRA strategies often or all the time. Further, 93 percent of survey respondents “agreed” or “strongly agreed” that the TRA strategies were easy to implement and 74 percent have shared the strategies with others in their schools or districts. Finally, 77 percent of survey respondents “agreed” or “strongly agreed” that their teaching had improved as a result of the academy training, while 72 percent “agreed” or “strongly agreed” that their students’ reading achievement improved as a result of the academy training.
- Survey respondents who participated in the OTRA reported somewhat similar experiences as the participants of the face-to-face academies, but overall, the OTRA survey respondents reported ratings that were lower than those who participated in the face-to-face reading academies.
- Administrators who had recommended or required their teachers to participate in the reading academies tended to be more familiar with the training, reported higher levels of teacher participation in the academies, and generally reported higher levels of teacher implementation of TRA strategies.

Evaluation of the Teacher Mathematics Academy

The TMA evaluation showed mixed results, and was not as strong as the TRA in instructional content. Teacher participation rates were also lower for the TMA trainings, yet the cost-per-participant was lower than the reading academies.

Mixed Results on Student Performance

The results of the statistical analysis shows that schools with a higher percentage of teachers who attended the TMA for Grades 6 and 7 had higher TAKS scores than schools with lower teacher TMA participation rates. However, a higher percentage of teachers who received TMA training for Grade 5 (when the Grade 5 was in an elementary school) resulted in lower TAKS scores, and TMA training appeared to have no impact on TAKS scores for Grade 5 students in middle schools. Insights as to why this occurred are presented later in this section.

Cost-Effective Approach

The state invested \$12.4 million to design and deliver the TMA in the first year of its implementation. This amount includes some in-kind and indirect costs incurred by ESCs that were not charged to the grant program. The average cost to develop and deliver the TMA training for Grades 5 and 6 was \$987 per participant, including the teacher stipends. Program development costs were higher than the reading academies on a per-participant basis, but the delivery cost was lower. Stipend expenditures were also lower, since \$150 of the \$600 total stipend was contingent on the completion of teacher assignments after the initial training. Since some teachers did not exercise this option, the average stipend paid was less than \$500 per participant. These expenditure levels, like the reading academies, compare favorably to similar professional development programs in other states and industry benchmarks – even with the teacher stipend. Teacher stipends represented 50 percent of the total cost, and program delivery and program development comprised 29 percent and 21 percent, respectively.

Because funding for teacher stipends was discontinued during the implementation of the TMA for Grades 7 and 8, and since the ESCs were not required to track training delivery costs for the Grades 7 and 8 academies after the TMA grant funding was discontinued, the overall cost-effectiveness of these TMAs for middle school teachers could not be fully evaluated.

Generally Favorable Reviews by National Experts

Reviews by national mathematics education experts concluded that the TMA training materials were grounded in research and demonstrated a clinical knowledge of teaching and learning mathematics, particularly in the areas of standards-based instruction, instructional content, and current research on multiplicative reasoning and rational numbers. The TMA training materials contained nine of the twelve professional development standards recommended by the National State Development Council (NSDC), and in general, reflected the same strengths and weaknesses as the TRA training materials. Areas for improvement in the content of TMA materials included a more thorough use of research-based approaches for teaching at-risk learners and a stronger emphasis on more challenging mathematics.

Mixed Feedback from On-Site Observations

The same 54 schools visited for the reading academies were also evaluated for the mathematics academies. The evaluation team interviewed teachers and observed classes, and like reading, met with teachers who did and who did not participate in academy training.

Overall, site visits found that teachers used TMA-promoted diagnostic tools and instructional strategies in daily practice when these tools and strategies supported what the teachers were already doing prior to TMA training. Interviews with TMA participants found that many of the TMA objectives did align with participants' previous teaching practices. However, when TMA teaching strategies differed from existing diagnostic tools, there appeared to be less enthusiasm for implementation. Since many of the TMA teaching strategies were similar to those that teachers already used, the participating teachers felt that TMA training simply validated and fortified their existing teaching strategies.

Information gathered during site visits and focus groups indicated that teachers who participated in the TMA thought the delivery of the TMA training material was too rigid. Less experienced teachers stated that they benefited from the content of the TMA training materials and the TMA's focus on vertical alignment, but felt that either the content should have been limited over the three-day training period or the time allotted to training extended. Teachers with more experience viewed the academy content as repetitive.

Survey Results Favorable, but not as Strong as Reading

For the most part, survey responses regarding the TMA were favorable, however, in comparison to the perceptions regarding the TRA training, the TMA participants tended to rate the overall quality and impact of the TMA lower than TRA participants. Key survey findings were:

- Almost three quarters (73 percent) of TMA participants responding to the survey indicated that the overall quality of the academies was "good" or "very good," while 56 percent of school administrators rated the quality of the academies as "very good" or "excellent." However, when asked to compare the TMA to other mathematics training experiences, three out of five respondents (60 percent) who participated in the training rated the TMAs as "average" and only one-fourth rated them as "above average."

- When asked the extent to which a variety of factors influenced their decisions to attend the TMA, the majority of the respondents indicated that the availability of stipends strongly influenced their decision to attend the academy. Also influential however, were teachers' principals, district administrators, and the content of the training.
- The large majority of survey respondents agreed or strongly agreed that the TMA strategies were easy to implement. However respondents provided mixed opinions about the potential teaching and student outcomes from participating in the TMA training. In contrast to the teachers who attended the TRA trainings, smaller percentages of TMA participants indicated that they perceive these outcomes as a result of the training. Notably, 22 percent of the TMA respondents indicated that the TMAs resulted in instructional change in their district in contrast to 60 percent of the reading teachers who attended TRA trainings.
- Similar to the TRA findings, administrators who had recommended or required their teachers to participate in the TMAs tended to be more familiar with the training, reported higher levels of teacher participation in the academies, and generally reported higher levels of teacher implementation of TMA strategies. However, in comparison to the reported outcomes of the TRA, administrators were less likely to agree that the TMA improved mathematics instruction and students' mathematics achievement at their schools with large percentages of administrators reporting no opinion rather than expressing agreement.
- Sixty percent of the TMA participants responding to the survey reported that they knew "most or all" of the teaching strategies covered in the TMA and 81 percent indicated that they know "most or all" of the subject matter.

Evaluation of Science Teacher Quality Grant Program

Historically, student performance in science has differed considerably from that in reading and mathematics. During 2003, 80 percent of all Grade 5 students met the TAKS passing standard in reading and 86 percent met the passing standard in mathematics, compared to only 75 percent of Grade 5 students in science. In addition, the gap between the performance of all students and economically disadvantaged students, in meeting these performance standards is greater for science than either reading or mathematics. For example, the difference in the percentage of all students and economically disadvantaged students who achieved the panel recommended standard on the 2003 Grade 5 TAKS test is greater for science (42 percent vs. 25 percent) than for either reading (73 percent vs. 62 percent) or mathematics (57 percent vs. 46 percent). Even larger gaps exist on both the 2003 and 2004 Grade 10 and

11 science TAKS tests and provide the underlying rationale for the Science Teacher Quality Grant program.

The Science Teacher Quality Grant program is fundamentally different from the mathematics and reading academies in terms of its structure and delivery. The program is comprised of two primary components:

- Federal Type A grants – these grants support the development and statewide dissemination of comprehensive professional development modules in middle school and high school science
- Federal Type B grants – these grants support the delivery of modules developed with Type A Grants for the professional development of middle school and high school science teachers.

The two middle school science modules focus on the Texas Essential Knowledge and Skills (TEKS) standards for students in Grades 6 and 7, and separately for Grade 8. The science modules for high school students include Biology, Chemistry, Physics, and Integrated Physics and Chemistry (IPC).

The evaluation of the Science Teacher Quality Grants included a review of these programs against the following National Science Standards for professional development:

- Professional development for science teachers requires learning essential science content through the perspectives and methods of inquiry;
- Professional development for science teachers requires integrating knowledge of science, learning, pedagogy, and students; it also requires applying that knowledge to science teaching;
- Professional development for science teachers requires building understanding and ability for lifelong learning; and
- Professional development programs for science teachers must be coherent and integrated.

The professional development criteria for the Science Teacher Quality Grant program appear to be generally aligned with these national standards and require alignment with the TEKS. However, in comparison with the TRA and TMA, a notable difference in the Science Teacher Quality Grant program is the apparent absence of a consistent message and commitment to provide research-based professional development to every teacher in the state. Results from this study show that this kind of strong message was especially effective in the TRA. However, with the variety of professional development modules

created by multiple developers under the Type A grants, the potential exists that less consistent messages will be delivered.

Regardless of the type of professional development for science teachers the state chooses to implement, the evaluation team suggests using a scientifically-based research design to evaluate the impact of these programs on a pilot basis. The design should use mixed methods, similar to the types of varied methods used in the evaluation of the TRA and TMA, to assess the impact of specialized science professional development training on the performance of students taught by pilot project teachers (treatment group) as compared to a matched cohort comparison group of students who are taught by teachers that do not receive the specialized professional development training (control group).

Impact of Academy Participation on Teacher Retention

In addition to improving student achievement in reading, there appears to be a stronger statistical relationship between teacher participation in the TRA and a teacher's decision to remain in the teaching profession, particularly for African American teachers. Teachers who participated in the TRA also have a higher tendency to remain employed at the same grade level, the same grade span (e.g., elementary), and even in the same school district. Many other factors obviously affect teacher turnover statistics, but the strength of the statistical relationship is noteworthy.

The findings on TRA participation and teacher retention are particularly significant in terms of potential cost savings to the state. Teacher turnover is estimated by the State Board of Educator Certification to cost Texas from \$329 million to \$1.2 billion annually. If there is in fact a causal relationship between teacher TRA participation and teacher retention, this program could essentially pay for itself.

The impact of TMA training on teacher retention cannot be measured with any scientific validity given the very brief amount of time that these academies were in place. Further, teacher participation in the TMAs declined significantly after the initial year when funding for teacher stipends was discontinued.

Conclusion and Policy Recommendations

This study used five different evaluation methods to assess teacher training programs related to reading, mathematics, and science, and within each program the varied approaches—performed by different evaluators—yielded consistent results. The TRA was shown to be effective in improving student achievement in reading and grade promotion and was very favorably received by school teachers and

administrators. The TMA also showed some success, but the results were mixed across the board. Both programs were cost-effective, and TRA participation showed a strong statistical relationship to higher teacher retention.

If the state decides to reinstate, expand or continue any of these programs, the evaluation team believes that improvements should be made to improve the effectiveness and efficiency of the professional development academies. An overview of these recommendations is presented below:

1. Ensure that Texas teachers have access to high quality professional development opportunities structured to foster broad participation in training activities.

- Require administrator and/or principal training sessions;
- Provide incentives or compensation for teacher participation outside of their contract period;
- Consider a more expansive training network to deliver science training; and
- Require attendance by teachers at low-performing schools.

2. Improve the quality and effectiveness of academies.

- Revise the instructional content of the mathematics academy to be more research-based;
- Provide awareness training to administrators to increase use of training tools and obtain buy-in by school leadership before implementation;
- Expand the time period over which the academies occur – to be closer to the in-school use of teaching strategies; and
- Provide follow-up training and support for academy participants to ensure successful implementation of teaching strategies.

3. Improve cost-effectiveness of academies.

- Develop a standardized cost reporting framework – within the existing state account code structure—to provide more meaningful, consistent and complete program cost information for face-to-face and online training;
- Clearly articulate allowable costs under the grant programs;
- Base the number of trainers on projected academy enrollment to reduce overall cost.
- Schedule training based on geographic needs; and
- Maximize the number of participants reached through training.

4. Build into each teacher training program an evaluation component to monitor and modify the effectiveness and efficiency of teacher training initiatives.

- Establish evaluation goals, objectives, and methodologies as integral parts of statewide professional development initiatives, regardless of topic or timelines; and
- Establish a consistent data tracking mechanism for participants in all future academy programs, including online programs, and for participants in the Science Teacher Quality Grant program.

