THE TEXAS RURAL TECHNOLOGY (R-TECH) PILOT PROGRAM

SECOND INTERIM EVALUATION REPORT
EXECUTIVE SUMMARY

FEBRUARY 2010

TCER
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Acknowledgments

In 2007, the Texas Legislature (80th Texas Legislature, Regular Session, 2007) authorized the creation of the Texas Rural Technology (R-Tech) Pilot program, which provides $8 million in funding to support rural districts in implementing technology-based supplemental education programs. In order to be eligible for funding, districts must have served fewer than 5,000 students and must not have been located in a metropolitan region of the state in 2007. Districts with limited course offerings and low accountability ratings received priority in grant awards. R-Tech funding is intended to support supplemental educational programs, including online courses, offered outside of students' regularly scheduled classes (e.g., before or after school). Districts that receive funding are required to provide students in Grades 6 through 12 with access to technology-based instructional resources for a minimum of 10 hours a week.

R-Tech grants were awarded in two periods, or cycles. The Texas Education Agency (TEA) awarded approximately $6.3 million in funding to 64 districts[1] in Cycle 1 grant awards, and $1.5 million in funding to 19 districts in Cycle 2 grant awards.[2] Cycle 1 grant awards must be used during the May 1, 2008, through May 31, 2010, project period, and Cycle 2 awards must be used during the January 1, 2009, through May 31, 2010, project period. Grantee districts receive $200 per student served by R-Tech in state funding for each year of the grant and are required to provide matching funds of $100 per student per grant year.

In establishing R-Tech, the Legislature required that the program be evaluated to assess its effects on student and teacher outcomes, as well as the program's cost effectiveness. In addressing these goals, the evaluation considers the following research questions:

1. How is R-Tech implemented across grantee districts and schools?
2. What is the level of student participation in R-Tech?
3. What is the effect of R-Tech on teachers?
4. What is the effect of R-Tech on student outcomes?
5. How cost effective is R-Tech?

The evaluation is made up of two interim reports (fall 2008 and winter 2010) and a final report (fall 2010). The findings presented here are drawn from the evaluation's second interim report (winter 2010). The report's findings are preliminary and consider outcomes from R-Tech's first implementation year for only those districts receiving Cycle 1 grant awards. The evaluation's final report will provide more complete information about Cycle 1 districts' experiences in implementing R-Tech for the full 2-year grant period.

RESEARCH QUESTIONS: KEY FINDINGS

The sections that follow present key findings relative to each of the evaluation's research questions. Results are preliminary and address outcomes for Cycle 1 districts for R-Tech's first implementation year.

Research Question 1: How is R-Tech Implemented Across Grantee Districts and Schools?

The following sections present information about the types of programs districts implemented using R-Tech funds, as well as principals' and facilitators' roles in implementing the program, the challenges to implementation and how challenges were overcome.

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[1]One Cycle 1 district opted not to participate in the grant, which reduced the total number of Cycle 1 grantees to 63.
[2]Three Cycle 2 districts also received Cycle 1 awards.

Supplemental vs. non-supplemental programs. Although R-Tech was intended to support districts' efforts in implementing supplemental educational programs offered outside the regularly scheduled school day, a substantial proportion of Cycle 1 districts (40%) implemented R-Tech as part of classroom instruction (i.e., non-supplemental programs). Many districts used R-Tech funding to update their computer labs, and teachers scheduled class time in the lab for students to access resources. Two districts implemented R-Tech as a technology immersion program and used funding to support the purchase of laptop computers for all teachers and students in Grades 6 through 12. Students and teachers use laptops throughout the school day and may take laptops home.

While some districts planned non-supplemental programs (e.g., technology immersion programs), other districts encountered challenges in implementing supplemental programs that caused them to revise their plans. District representatives explained that many students resisted participating in programs offered before or after school. Further, some students were not able to participate in R-Tech services because of conflicts with extra-curricular activities and bus schedules that limited their ability to arrive early or stay after school.

Self-paced instructional programs. Most districts (87%)[3] implemented R-Tech as a self-paced program focused on tutoring, remediation, or credit recovery. Self-paced programs provide access to online lessons that students work through at their own pace. Many self-paced programs include diagnostic assessments of students' individual learning needs and tailor instruction based on assessment outcomes. Some programs enable students to complete entire courses online, allowing students to make up credit for incomplete or failed courses. Sixty percent of districts offering self-paced instructional programs implemented supplemental programs in which students accessed resources outside of regularly scheduled classes.

Dual credit and distance learning. About 30% of Cycle 1 districts offered dual credit coursework using R-Tech funding. Dual credit courses enable students in Grades 11 and 12 to take courses that fulfill high school graduation requirements and earn college credit. Such courses are generally taught by college or university faculty and students participate online or through the use of video conferencing equipment. R-Tech districts implementing dual credit courses partnered with community colleges and universities to provide instruction, and some programs were facilitated by regional Education Service Centers (ESCs). Sixty percent of districts that offered dual credit programs offered supplemental programs in which students participated in dual credit courses in addition to their regularly scheduled classes.

Other programs. Six Cycle 1 districts offered different types of programs. Two districts used R-Tech funding to purchase iPods, which were loaded with instructional content for students to use at home (supplemental programs). Two districts offered technology immersion programs in which all students received laptops to use as part of regular instruction (non-supplemental programs). Two other districts planned to offer R-Tech as a program that included one-to-one tutoring with online instructional support; however, neither district implemented its program for students during R-Tech's first year. It is not known whether R-Tech services will be implemented as supplemental or non-supplemental programs in these districts.

Implementation roles. R-Tech facilitators had the largest role in implementing district programs. Principals primarily provided support for communicating program goals and planning for the grant, but had lesser roles in the day-to-day management of the R-Tech activities. In most districts, teachers had little or no role in planning and implementing R-Tech activities during the grant's first year.

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[3]The percentage of districts included in each program type will not total to 100 because districts were able to implement more than one type of program. Districts were able to implement separate programs in their middle and high schools. For example, a district may have implemented dual credit instruction in its high school, but offered a self-paced tutoring program in its middle school.

Implementation challenges and supports. Principals and R-Tech facilitators indicated that most implementation challenges resulted from the need to clearly communicate program goals to parents and staff, as well as from insufficient planning time and from program reporting requirements. Many principals and R-Tech facilitators also noted the challenges of implementing a technology-based program in districts with outdated computer hardware and insufficient infrastructure to support expanded technology resources. Principals and program facilitators reported that strong administrative support, the additional revenue provided through the grant, as well as staff buy-in were factors that contributed to successful implementation.

Research Question 2: What is the Level of Student Participation in R-Tech?

Across Cycle 1 districts, most students were identified for R-Tech services because of weak academic performance, including poor Texas Assessment of Knowledge and Skills (TAKS) scores, failing grades, and prior academic failure. The number of students participating in R-Tech increased across the program's first year as districts implemented their programs more fully. While less than half of grantee districts (47%) offered R-Tech as part of the 2008 summer session, nearly all districts (92%) had implemented the program for students in spring 2009. Comparisons of the level of participation in R-Tech between students receiving services in summer school and students receiving services as part of the regular school year (i.e., fall 2008 and spring 2009) suggest differences in how resources may be used during the regular school year and summer school.

Regular school year vs. summer school. In fall 2008, 8,795 students accessed R-Tech resources (an average of 97 students per campus) and used resources for an average of 3.7 hours a week. In spring 2009, 12,736 students accessed R-Tech resources (an average of 129 students per campus) for an average of 3.8 hours per week. There were few differences between the characteristics of students who received R-Tech services and those who did not during the regular school year. That is, R-Tech students largely mirrored the overall student population in their districts in terms of grade levels served and demographic characteristics. The 1,370 students who participated in R-Tech during the 2008 summer session (an average of 37 students per campus) had much higher levels of usage than students using R-Tech during the regular school year. On average, summer school students accessed R-Tech resources for 8.5 hours each week—more than twice the average usage in fall 2008 and spring 2009—and were more likely to be middle school students, with the largest proportion of students (29%) enrolled in the eighth grade. Relative to non-participating students, students participating in R-Tech during summer school were more likely to be from low income (55% vs. 46%) and minority (50% vs. 36%) backgrounds. These differences suggest that some districts implemented R-Tech as an intensive summer school program designed to support at-risk middle school students with the transition to high school and to reduce middle school retention rates.

What students study using R-Tech resources. Results from district student usage data indicate that the largest proportions of students used R-Tech resources to focus on math (70%) or English/language arts (ELA) (46%). Surveyed middle school students were more likely to concentrate on math instruction than high school students (42% vs. 26%), and high school students were more likely to focus on ELA (28% vs. 21%). However, high school students participating in dual credit courses were notably more likely to focus on social studies than other R-Tech students in Grades 11 and 12 (60% vs. 10%).

Barriers to student participation in R-Tech. Student resistance, conflicts with extra-curricular activities, and transportation challenges limited students' ability to participate in R-Tech. To address barriers, districts expanded R-Tech access times, required participation for some students, and implemented incentives to student participation (e.g., offering snacks). Students also reported that slow computers, weak school infrastructure, software that was poorly matched to students' instructional needs, and teachers' lack of technical skills created challenges to participation.

Benefits of student participation. Staff on R-Tech campuses and students who received services during the program's first year reported a range of benefits from participation in the grant. Teachers indicated that R-Tech had improved students' academic outcomes, noting that grades had improved and that students who recovered credits were able to progress to the next grade on time. Teachers and students reported that participation in R-Tech had improved the confidence of some students and that self-paced programs eliminated the pressure students felt to keep up with the pace of classroom instruction. In addition to academic benefits, students appreciated the convenience of using technology for learning and the expanded access to information offered by online resources. Students also felt that their improved proficiency using computers would benefit them in college and the workplace.

Research Question 3: What is the Effect of R-Tech on Teachers?

In grant applications, all Cycle 1 districts indicated that R-Tech resources would be used to expand teachers' access to technology-based professional development activities; however, results from teacher surveys and focus group discussions suggest that many teachers were unaware of the R-Tech resources available to them and that few teachers participated in R-Tech professional development opportunities during the grant's first year.

R-Tech professional development. About 38% of teachers responding to the spring 2009 survey participated in training offered as part of R-Tech. Most teachers reported that training addressed preparation for standardized tests, using technology to provide instruction, working with at-risk students, and topics related to the use of new computer hardware and software. Across training topics, less than a quarter of surveyed teachers reported training was technology-based. Instead, most teachers reported that training was provided in face-to-face formats, such as workshops. District-provided data on teacher use of online training resources indicate that about 800 teachers (approximately 22% of all teachers working on R-Tech campuses) accessed online training opportunities during the 2008-09 school year, spending about 16 hours, on average, using online training resources, and that middle school teachers had higher average rates of usage (19 hours) than high school teachers (16 hours).

Other opportunities provided by R-Tech. Beyond professional development opportunities, teachers reported that they benefitted from the increased access to technology provided by R-Tech, noting that improvements to computer labs enabled them to create lessons that integrated technology. Teachers also appreciated that R-Tech resources facilitated the development of differentiated lessons and increased students' engagement in learning. Teachers also noted that R-Tech resources had been underused in the program's first year. Some principals reported that information about R-Tech had not been fully communicated to teachers and that they would take steps to encourage greater teacher use during the program's second year.

Research Question 4: What is the Effect of R-Tech on Student Outcomes?

The sections that follow present results from analyses of R-Tech on students' TAKS outcomes. However, test results are a limited indicator of R-Tech program effects because most standardized tests lack the sensitivity needed to measure incremental increases in student achievement produced by supplemental programs such as R-Tech. Given this limitation, readers are asked to consider this report's findings as preliminary. The evaluation's final report (fall 2010) will include a broader range of student outcome data, including graduation and attendance rates, advanced course completions, and indicators of college readiness, that were not available at the time of this report's writing.

The effect of access time. Students who spent more time using R-Tech resources did not experience improved testing outcomes relative to students who spent less time with resources. However, results should be interpreted with caution because researchers were not able to control for unobserved student differences that may have affected outcomes. For example, students who spent more time using R-Tech

resources may have been at greater academic risk, requiring more remediation time than students who used R-Tech for briefer periods. If this was the case, then the lack of effect for time spent accessing R-Tech may reflect the characteristics of the students identified for more intensive support rather than the effects of the support itself.

Program type. The small number of districts offering one-to-one tutoring with online instructional support, technology immersion programs, and iPods loaded with instructional content prevented their inclusion in the statistical analysis of program type; therefore, analyses were limited to students participating in self-paced programs and dual credit courses. Students participating in self-paced programs experienced reduced TAKS scores in reading/ELA relative to R-Tech students who participated in other program types; however, self-paced programs had no effect on TAKS outcomes in mathematics, science, and social studies. Again, results should be interpreted with caution because it was not possible to control for the student characteristics that may have caused students to be identified for self-paced programs. If students identified for self-paced programs had more serious academic deficiencies than students identified for other types of R-Tech programs, then results may have been produced by unobserved student characteristics rather than program participation.

Supplemental vs. non-supplemental instruction. Students who received R-Tech services as supplemental instruction offered outside of the regular school day experienced reduced TAKS testing outcomes in social studies relative to students who participated in R-Tech as part of the regular school day (i.e., non-supplemental programs). The effects of supplemental programs on students' reading/ELA, science, and mathematics were persistently negative, but not by statistically significant levels. These findings suggest that R-Tech services implemented as part of regular instruction may improve students' TAKS outcomes; however, the characteristics of students identified for supplemental services may have affected outcomes. That is, students identified for supplemental services may have struggled academically, while students participated in non-supplemental services irrespective of academic need, which may indicate that testing outcomes reflect the effects of students' academic characteristics rather than program participation.

Research Question 5: How Cost Effective is R-Tech?

Similar to findings for R-Tech's effects on student achievement, readers are asked to consider results of this report's cost-effectiveness analysis as preliminary. Districts varied in the degree to which they accessed grant funding over R-Tech's first implementation year. While some districts accessed nearly all of their state grant funding during R-Tech's first year (May 2008-May 2009), other districts used little or no state funding. This limitation will be offset in the final evaluation report (fall 2010), which will include data from the full 2-year grant period when districts will have accessed nearly all of their funding. Note that findings on R-Tech's cost effectiveness are limited to districts' use of state grant funding and do not include information on districts' use of matching funds.

The allocation of R-Tech funding. Districts report their expenditures of state grant funding through TEA's Expenditure Reporting (ER) system, which includes five spending categories: (1) payroll costs, (2) professional and contracted services, (3) supplies and materials, (4) other operating costs, and (5) capital outlay. Program budgets included in grant applications indicated that most R-Tech districts characterized purchases of computer hardware as "supplies and materials," but some districts included computer hardware in "capital outlay." Further, most districts characterized computer software as "professional and contracted services," but others included software as "supplies and materials," or "capital outlay." Variations in how districts budgeted computer hardware and software make it difficult to clearly identify these expenditures in the ER system data.

Acknowledging this limitation, analysis of R-Tech expenditures indicates that most districts invested heavily in computer hardware and software during the program's first year. The largest share of grant

funding (67%) was allocated to "supplies and materials" and about 10% of funding was spent on "capital outlay." In grant budgets, districts indicated purchases of laptop and desktop computers, LCD projectors, printers, furniture for computer labs, and instructional software in both expenditure categories.

Districts implementing self-paced and technology immersion programs spent more on "supplies and materials" and "capital outlay," as did districts that implemented R-Tech as part of the regular school day (i.e., non-supplemental programs). While districts' average first-year expenditures on "supplies and materials" and "capital outlay" were $29,338 and $4,378, respectively, districts implementing self-paced programs spent about $29,830 on "supplies and materials" and about $4,443 on "capital outlay." Districts implementing technology immersion programs spent about $67,650 on "supplies and materials" and did not allocate funds for "capital outlay."[4] Districts implementing non-supplemental programs spent about $36,890 on "supplies and materials" and $6,625 on "capital outlay."

About 15% of state grant funding was spent on "professional and contracted services" during R-Tech's first year. Expenditures in this category included tuition and fees for dual credit courses and payments for professional development, technical support services, and educational software. Districts implementing dual credit and distance learning courses and one-to-one tutoring and online support spent more in this category. Only 8% of first year grant funding was spent on "payroll costs." Payroll expenditures covered the costs of salaries for newly hired computer lab facilitators, extra-duty pay for teachers who worked before or after school to provide R-Tech services, and the costs of substitutes to enable teachers to participate in professional development. Districts did not spend any state funding for "other operating costs."

The cost effectiveness of program configurations. In spite of substantial start up costs in terms of investments in technology resources, districts that implemented R-Tech for larger numbers of students experienced the lowest per-student program costs. Across Cycle 1 districts, the average per-student cost of providing R-Tech services during the program's first year was $420. Districts that implemented programs serving 500 or more students experienced average per-student costs of $111, while districts that served fewer than 50 students during R-Tech's first year had average per-student costs of more than $1,500. R-Tech districts that implemented self-paced programs had average per-student costs that were slightly above average ($428) and districts implementing dual credit and distance learning programs had per-student costs that well below average ($198). This difference is likely the result of greater investment in technology resources needed to implement self-paced programs. Although technology immersion programs spent heavily on computer resources during R-Tech's first year, districts implementing this type of program experienced below average per-student costs ($269) because large numbers of students participated in the program. Districts that implemented R-Tech using iPods loaded with instructional content served fewer students and had average per-student costs of about $358.[5] Across program configurations, per-student implementation costs are expected to drop during R-Tech's second year as more students gain access to resources purchased in the grant's first year.

Supplemental vs. non-supplemental instruction. Districts that implemented R-Tech as part of regular classroom instruction (i.e., non-supplemental programs) experienced substantially lower per-student costs than supplemental programs ($182 vs. $612, on average). The difference in costs results from differences in the numbers of students served. Districts implementing supplemental programs served an average of

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[4]The notably high expenditures for "supplies in materials" is the result of one technology immersion district budgeting its full grant award ($200,000) to purchase laptop computers for students and teachers. The district accessed 60% of its grant award ($120,886) during R-Tech's first implementation year.

[5]Neither district offering R-Tech as one-to-one tutoring with online instructional support served students during the program's first implementation year. Therefore, it was not possible to identify a per-student cost for this type of program.

172 students during R-Tech's first year, while districts implementing non-supplemental programs served an average of 350 students.

Sustainability. Nearly half (48%) of principals responding to the spring survey reported that insufficient financial resources created a *moderate* or *substantial* barrier to continuing R-Tech after grant funds expire in May 2010. Most principals (55%) indicated that R-Tech would be offered as part of classroom instruction rather than as a supplemental program at the conclusion of the grant. During interviews conducted as part of spring site visits, several principals said they would only continue R-Tech after the grant period if the program demonstrated positive effects on students' TAKS scores.

THE ONGOING EVALUATION

The findings presented in this report are preliminary and are drawn from R-Tech's first implementation year in Cycle 1 districts. The ongoing evaluation will continue to collect information about how Cycle 1 districts implement R-Tech, the challenges and benefits of implementation, and the program's effect on student and teacher outcomes, as well as its cost effectiveness across the grant's second year. More conclusive findings for the grant's full 2-year implementation period will be presented in the final evaluation report (fall 2010).

As discussed earlier in this summary, the final report will include a broader range of student achievement indicators and complete information on Cycle 1 districts' use of state grant funds. The final report will also include findings from surveys of R-Tech facilitators, principals and teachers on R-Tech campuses, and students who participated in R-Tech services administered in spring 2010, as well as information collected during site visits to R-Tech districts in spring 2010. The inclusion of survey and site visit data gathered at the grant's conclusion will enable researchers to identify modifications to districts' implementation plans, changes in respondents' roles in implementation and perceptions of grant services, and how changes may affect student and teacher outcomes.

For additional detail and discussion, the complete report is located at the following website:
http://ritter.tea.state.tx.us/opge/progeval/ReadingMathScience/RTech_Interim_02_0210.pdf