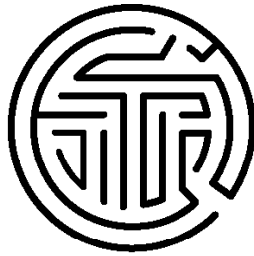




**RETA PROGRAM
YEAR 4 EVALUATION**



C C T R E P O R T S
SEPTEMBER 27, 2002

**RETA PROGRAM
YEAR 4 EVALUATION**

PREPARED BY
NAOMI HUPERT
WENDY MARTIN, PH.D.
WITH
NOGA ADMON
BECKY ADAMS

CENTER FOR CHILDREN & TECHNOLOGY

EXECUTIVE SUMMARY

The Regional Education Technology Assistance (RETA) program has completed its fourth year of program activities, addressing many of the goals outlined in the original project proposal. The program offers professional development opportunities to educators across the state of New Mexico in the integration of technology into academic content. The program also emphasizes developing regional expertise among classroom teachers who can act as peer technology experts in their communities. In addition, the program addresses issues of education technology policy at a statewide level and provides resources to pre- and in-service teachers through partnerships with institutions of higher education at several Regional Resource Centers throughout the state. The program works to reach teachers of students who are often underserved by more traditional professional development efforts.

The RETA program has achieved many of its goals. Below are some of the most striking findings from the Year Four Evaluation.

After Participating in RETA, Teachers Changed What They Did in Classrooms

- RETA teachers increased the kinds of technology they used, such as computers, video cameras, scanners and digital cameras.
- RETA teachers increased the kinds of software packages they used, including word processing, spreadsheet, World Wide Web surfing software, educational software, CD ROM.
- RETA teachers increased the frequency with which they used technology.
- More RETA teachers provided professional development to peers.
- RETA teachers increased the frequency with which they assisted peers with software and hardware problems.
- RETA teachers increased the frequency with which they discussed technology-related curriculum with peers.
- RETA teachers attended and presented at professional conferences more often after participating in RETA.

Teachers Altered What Their Students Did in Classrooms

- RETA teachers had their students use technology more often.
- RETA teachers had their students use a greater variety of software applications.
- RETA teachers increased their use of curriculum units integrating technology into classroom content.

- Students of RETA teachers engaged in group activities more often after their teachers participated in RETA.

Changes in State Policy and Practice

The RETA program directly affected multiple changes in state policy including:

- Drafting statewide teacher technology standards
- Raising expectations that funded programs collaborate with state agencies and other efforts
- Preparing educators for future demands on teachers in areas such as data-driven decision-making and assessment
- Preparing educators to secure and make best use of E-Rate funding
- Supporting and encouraging women and minorities to take on educational technology leadership roles
- Altering the funding formula to improve the use of state technology funds.

RETA Addressed the GPRA Indicators

Indicator 2.3 Demonstrate that the professional development model results in improved instructional practice.

The RETA program has identified multiple statistically significant findings using matched pair analysis from data collected through pre- and post-surveys and structured observations that show improved instructional practice among participants.

Indicator 3.3: Demonstrate positive impact on Curriculum

RETA has developed and revised a vast collection of curricular materials that address a range of content and effective uses of technology in ways that are accessible and can be implemented in a range of age and ability settings. Many of the units developed address culturally relevant issues for the state of New Mexico, such as Native American, Spanish and American history. All the curriculum modules address statewide learning standards. In addition, RETA has developed modules that are available in Spanish, and some that incorporate the Navajo language. Over 75% of RETA participants indicated that they used some or all of a RETA module while teaching during the past year.

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INTRODUCTION

The RETA program has completed its fourth year of program activities, addressing many of the goals outlined in the original project proposal. The program offers professional development opportunities to educators across the state of New Mexico in the integration of technology into academic content. The program also emphasizes developing regional expertise among classroom teachers who can act as peer technology mentors in their communities. In addition, the program addresses issues of education technology policy at a statewide level and provides resources to pre- and in-service teachers through partnerships with institutions of higher education at several Regional Resource Centers throughout the state. The program works to reach teachers of students who are often underserved by more traditional professional development efforts.

The state of New Mexico has one of the highest percentages of at-risk students in the country due to poverty and language diversity. The state is a minority majority state with approximately one-third of all students coming from homes where English is a second language. In addition, close to a quarter of New Mexico students do not complete high school, compared to the national average of approximately 18%.¹ Compounding these problems are issues faced by educators working in a state with geographically isolated populations and limited access for many teachers to professional development opportunities.

Overall the number of teachers in New Mexico has increased during the past five years, yet at the same time the number of teachers who hold master's degrees in education (now 38%) has dropped by close to 5%.² This reflects a trend in many states where shortages of skilled teachers are forcing schools to hire less prepared teachers. During the 2000–01 school year, New Mexico reported a 68% increase in teaching vacancies over the previous year.³ Recent studies, however, show that a skilled and prepared teacher is a key factor in students' early and ongoing academic success (Hayes & Salazar, 2001; Land & Moustafa, 2002).

The RETA program was designed to meet the multiple and unique needs of New Mexico's teaching population and to provide:

- Locally available professional development addressing specific concerns of schools and teachers
- Opportunity to earn graduate credit in a local setting
- Guidance from experienced teachers in integrating technology
- Guidance from experienced teachers in pedagogically appropriate practice
- Opportunity to network and develop a community of peers

¹ Figures from the 2000 Census. ² Figures from the New Mexico State Department of Education website. ³ Figures from the New Mexico Reading First State Application, 2002.

- Opportunity to provide students with access to resources beyond the school and community that address the cultural diversity of New Mexico
- Peer support for participation in other professional development experiences and opportunities such as:
 - participating in professional conferences
 - providing professional development to school or district peers and community members
 - pursuing additional professional development opportunities
 - developing school or district programming
 - writing grants for classroom, school, or district-wide programs.

In order to continue meeting teachers' needs, the program has evolved in response to issues raised through the ongoing evaluation process, and through ongoing meetings where concerns and ideas are raised by RETA teachers and instructors, and it has continued to work to best meet the changing needs of the teaching population of New Mexico. While multiple forces at work across the state and country over the past four years have influenced and advanced the role of technology in educational settings, the RETA program has contributed significantly to this advancement. The traditional focus of professional development in technology has been on showing teachers how to operate equipment rather than how to integrate the technologies into instruction (McCannon & Crews, 2000). Educators need to learn how to use technology in context, matching the needs and abilities of learners to the curriculum goals (Kent & McNergney, 1999). The presidential report on the use of technology in K-12 education describes technology as supporting a pedagogical shift in education toward the constructivist paradigm (Kent & McNergney, 1999). This shift away from traditional methods of instruction is based on the premise that it is learning with, not from or about, technology that makes computer-based technologies important tools in a constructivist learning environment (Boethel & Dimock, 1999). Educational technologies offer powerful ways of engaging in authentic forms of learning, but students will never experience this engagement if their teachers lack the skills to integrate technology comfortably into existing classroom content. RETA has responded to a need cited by education researchers to bring technology to educators in a way that is accessible and usable, and that integrates technology into content curriculum in ways that encourage teacher use, something often lacking with other technology professional technology efforts (Mandinach & Cline, 2000).

This report examines the impact of the RETA program on teachers, and examines the role that RETA has played in the education technology policy arena in the state of New Mexico. The evaluation report is presented in six sections:

1. GPRA indicators
2. Methods

3. Practice

4. Leadership

5. Program obstacles and challenges

6. Next steps

The section on GPRA indicators presents our findings as they relate to these indicators and makes a case for RETA impact on classroom instruction and changed practice.

The section on methods identifies the data collection and analysis methods used in the evaluation of the RETA program.

The section on practice presents our findings as they relate to the role RETA plays in changing how teachers engage in teaching students, and how they change their use of technology over time as a result of RETA participation. This section includes demographic information about RETA teachers as well as data indicating change in practice across multiple areas.

The section on leadership presents our findings regarding RETA's role in informing policy across the state and at the local level in schools and districts; it also touches on RETA's impact on other areas such as higher education. In addition, this section addresses issues regarding the RETA statewide network, the role that RETA plays in the professional lives of teachers, and RETA's work with school administrators and with the program's Regional Resource Centers.

The section addressing obstacles and challenges identifies issues that RETA staff must examine in all areas of the project.

The final section presents an outline of key evaluation activities for the program's final year.

GPRA INDICATORS

In this section we address the needs of the Technology Innovation Challenge Grant Program officers and staff to have ready access to information supporting the meeting of the GPRA Indicators. The information below addresses each indicator as it relates to programs focusing on professional development.

If we look to current research regarding the integration of technology into classroom activities, we see that good instructional practice includes:

- Knowledge about and comfort with a range of technical applications and an understanding of the potential for their developmentally appropriate classroom use (Mandinach & Cline, 2000; President's Committee of Advisors on Science and Technology, 1997)
- Ability to use technology as an integrated tool in the teaching and learning process (Kent & McNergney, 1999)
- Pedagogical shift toward constructivist learning environments (Boethel & Dimock, 1999).

Below we identify findings that show RETA has improved the instructional practice of its participants and has had positive impact on curriculum.

Indicator 2.3 Demonstrate that the professional development model results in improved instructional practice.

The RETA program has identified multiple statistically significant findings from data, collected through pre- and post-surveys and observations and analyzed using matched pair analysis, that show improved instructional practice among participants. Our findings show the following:

Educators participating in RETA increased:

- Their use of technology
- Their students' use of technology
- The range of technology used in classroom activities
- The range of software used in classroom activities.

In addition,

- RETA teachers significantly increased their time acting as facilitators during classroom activities and decreased their time acting as a leader or observer.

RETA teachers also reported:

- A significant increase in assigning students to work in group activities rather than independent, whole class, or listening activities.

While these findings are based on self-report data collected from RETA participants during their first and last RETA workshop (with an interval of approximately five months), the information has been confirmed by findings from structured observations that mirror many survey items. An analysis of observation data shows a clear trend of increased use of technology on the part of teachers and their students, and also shows shifts in pedagogical approach, including greater levels of facilitation activity by teachers and increased group work by students.

The use of group work as a classroom strategy is significant in this finding because it is often an indicator of project-based work that engages students in multiple activities in a collaborative environment with a common goal. Classroom environments in which project-based work predominates are often described as constructivist learning environments. In these settings, teachers act as facilitators, assisting in locating appropriate tools and materials for accomplishing the assigned task. The RETA program has enabled this type of environment to evolve in many classroom settings across New Mexico.

Indicator 3.3: Demonstrate positive impact on curriculum.

RETA has developed and revised a vast collection of curricular materials addressing a range of content and effective uses of technology in ways that are accessible and can be implemented in a range of age and ability settings. Many of the units developed address culturally relevant issues for the state of New Mexico, such as Native American, Spanish and American history. All the curriculum modules address statewide learning standards. In addition, RETA has developed modules that are available in Spanish, and some that incorporate the Navajo language. While Spanish language print or web-based curriculum modules are available through some educational organizations, there are virtually no Spanish-language multimedia curriculum modules available that clearly integrate technology, content and New Mexico state learning standards in a format that is accessible to teachers and students. RETA has completed multiple curriculum modules that include multimedia, address a range of issues relevant to the New Mexico student population, and are aligned with state curriculum and learning standards. Over 75% of RETA participants indicated that they used some or all of a RETA module while teaching during the past year.

METHODS

The information presented here has been collected and analyzed by external evaluators who worked collaboratively with the RETA staff to ensure that multiple aspects of the program were examined. The evaluators employed both qualitative and quantitative methods to gather data during the 2001–02 school year, including:

Pre- and Post-Surveys

Surveys were administered, via the web, to teacher participants and instructors during the first RETA workshop (in October or November of 2001) and then at the final workshop (between March and May of 2002) toward the end of the school year (see appendices A & B). Because individual workshop schedules vary considerably from location to location, collecting all pre- and post-data simultaneously was not an option. Instead workshop instructors were asked to direct their participants to complete the pre- or post-survey on the first and last day of the six-session workshops at whatever time they took place. The instruments collected demographic data as well as information about teachers' computer use, classroom practices, and attitudes towards technology. We matched pre/post-survey responses for 419 individuals (representing a 70% response rate), which enabled us to perform statistical tests for matched pairs. The data were analyzed using two non-parametric matched-pairs methods — the Wilcoxon Signed Ranks test and the McNemar test. We were able to substantiate significant changes between the pre/post samples at the level of $p < 0.01$ in a preliminary analysis of the data.

Classroom Observations

Ten teachers, including both new and repeat RETA participants, were observed implementing technology activities in their classrooms three times over the course of the year. Observations followed a structured protocol adapted from the Apple Classroom of Tomorrow (ACOT) and the Milken Professional Competency Continuum (PCC) survey (see appendices C & D). Every five minutes observers recorded what was happening in the classroom across various dimensions, including type of classroom activities, student and teacher roles, and technology and applications used. These data were then analyzed statistically so that change over time and differences between novice and experienced teachers could be measured. Qualitative observational data were recorded as well.

Teacher Interviews

The ten teachers involved in the classroom observations also participated in an exit interview. The interview protocol addressed issues of technology integration, student learning, and the role of RETA in the classroom (see appendix E).

Technology Leader Interviews

Interviews were conducted with RETA instructors who were acknowledged by peers and RETA staff to be technology leaders. Many of these educators had moved into administrative positions, or had taken on administrative or technology-related responsibilities in addition to their regular assignments. These educators were asked to discuss how their involvement in RETA has affected their professional lives (see appendix F).

Policy Leader Interviews

Several individuals, including the State Superintendent of New Mexico and the Director of the Office of Curriculum, Instruction and Technology, were interviewed with regard to the role of RETA in the policy arena. Issues such as the professional development needs of teachers and the vision of what students will need to be full participants in society were addressed (see appendix G).

Review of TLCF Grant Proposals and District Technology Plans

A researcher from New Mexico State University conducted an extensive review of the grant proposals submitted to the New Mexico State Department of Education (NMSDE) applying for money from the state's Technology Literacy Challenge Fund program and the technology plans that districts are required to submit to the NMSDE. The purpose of this review was to gauge the extent of the impact that the RETA program has had on the kinds of technology initiatives that New Mexico school districts are designing, and on school districts' ability to make effective use of state funding by leveraging the resources, expertise and leadership developed directly through RETA and through its Regional Resource Centers (see appendix H).

PRACTICE

Below we present findings from our Year 4 evaluation activities with regard to the RETA program. This section addresses findings as they relate to teacher practice and classroom implementation.

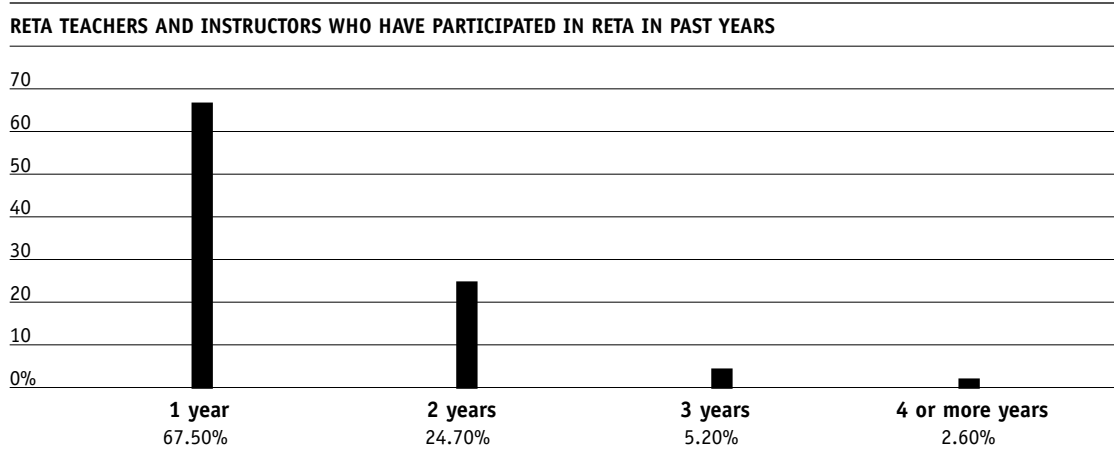
The RETA program has grown significantly over the past four years, more than doubling the number of instructors who provide training to teachers across the state. Through activities at the Regional Resource Centers and other programs provide by RETA staff, the numbers of teachers reached has increased by almost 400% (see Table 1).

Table 1. Number of teachers in RETA and number of RETA workshops over four years

	1998 - 1999	1999 - 2000	2000 - 2001	2001 - 2002
No. RETA Instructors	45	65	85	106
No. RETA/RRCs	4	6	6	6
No. RETA Sat. Workshops	140	168	312	297
No. RRC Sessions	42	95	159	189
Total Number	182	263	471	490
No. RETA Sat. Workshop Participants	244	648	890	940
No. RRC Primary Participants	Information not collected	Information not collected	1,440	1,748
Conference Presentation Participants	Information not collected	Information not collected	—	339
Total No. Primary Participants	923	2,118	2,529	3,923
No. NM Districts Served	34	60	66	76 SDE 3 BIA

Demographic Information

The teachers who participate in the RETA program are highly experienced and technically savvy. The average RETA teacher has taught for 12.5 years (about a year more than the average for New Mexico teachers), has a computer at home, and has Internet access at both home and school. More than half of RETA teachers have been members of the RETA program for over one year, and nearly a quarter have been involved for two years (see Figure 1). RETA teachers work in a range of classroom settings. However, the majority (67%) work at the elementary level, with 18% at the middle and 15% at the high school level. The RETA program casts a net that reaches beyond the traditional classroom teacher, and this year's group includes administrators, library and media specialists, school aides, and non-classroom personnel such as school counselors.

Figure 1. Number of years teachers have participated in RETA

With regard to technology, the average RETA teacher has between 4 and 5 computers in her or his classroom, and 91% of RETA teachers have Internet connectivity in their classrooms. This differs greatly from the national average of 39% for teachers reporting Internet connectivity in classrooms (Becker, 2000). In addition, RETA teachers far exceed their national peers with regard to the number of computers in their classrooms, with the National Center for Education Statistics reporting that only 38% of teachers have between 2 and 5 computers in their classrooms, and 36% have only one computer in their classrooms.⁴

The RETA program has worked to attract participants who reflect the student populations served by New Mexico's schools and who are traditionally less inclined to work with technology. Overall, female teachers make up a larger part of RETA participants than they do New Mexico's overall teaching population (Table 2).

Table 2. Gender

	RETA PROGRAM TEACHERS	NEW MEXICO TEACHERS	STATE OF NM
Female:	87%	75%	51%
Male:	13%	25%	49%

Similarly, RETA teachers include slightly higher percentages of educators identifying themselves as Hispanic and significantly higher numbers identifying themselves as Native American than in the general teaching population (see Figures 2a, b, c).

⁴ Figures from the National Center for Education Statistics report, "Teachers' Tools for the 21st Century: A Report on Teachers' Use of Technology." September, 2000.

Figure 2a. RETA Teachers and Instructors by Ethnicity

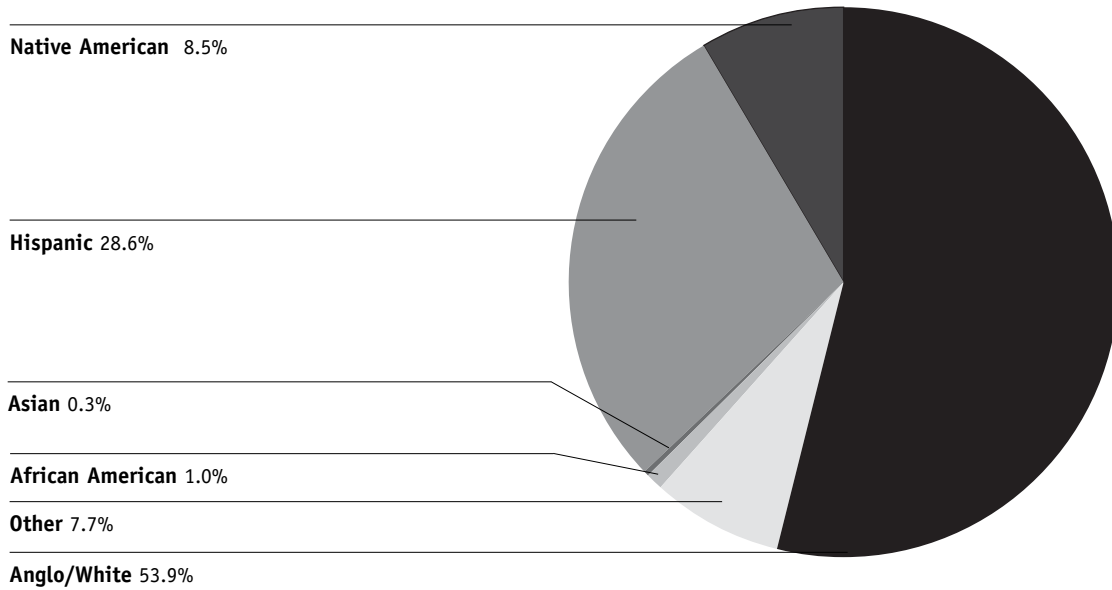


Figure 2b. New Mexico Teachers by Ethnicity

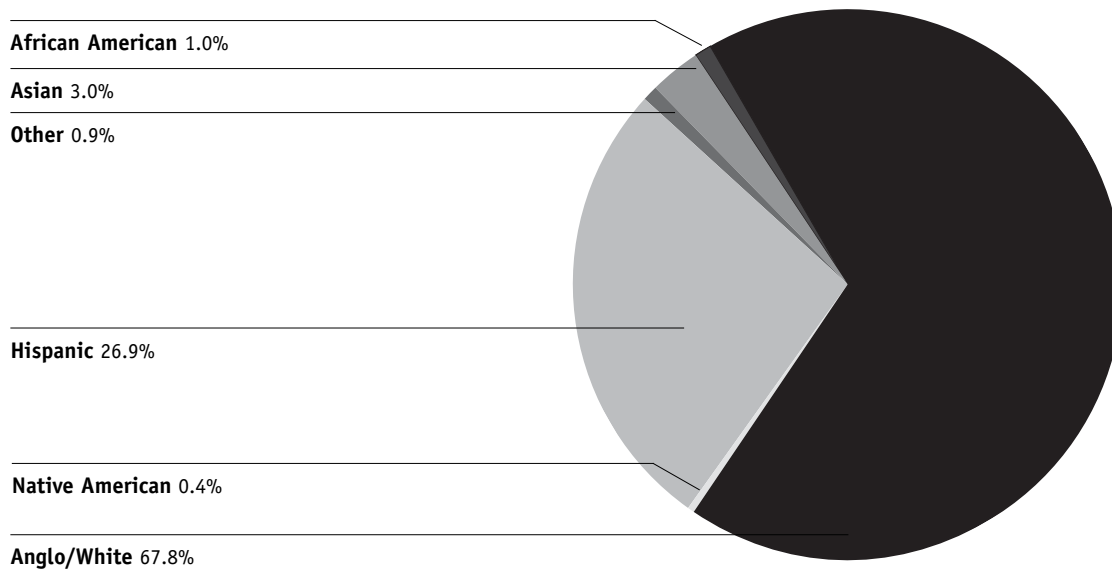
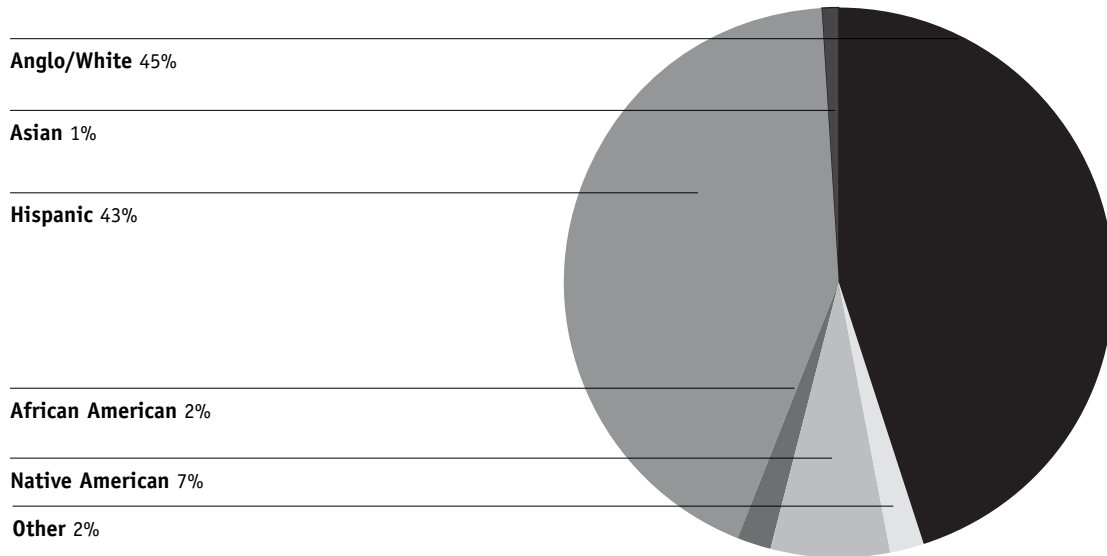


Figure 2c. New Mexico Population by Ethnicity



Many RETA teachers have also chosen to repeat their RETA experience, with almost a quarter of all RETA teachers having participated for two years. Length of time in RETA is an important factor in teachers' ability to integrate technology effectively into classroom activities and to develop as technology leaders in their communities.

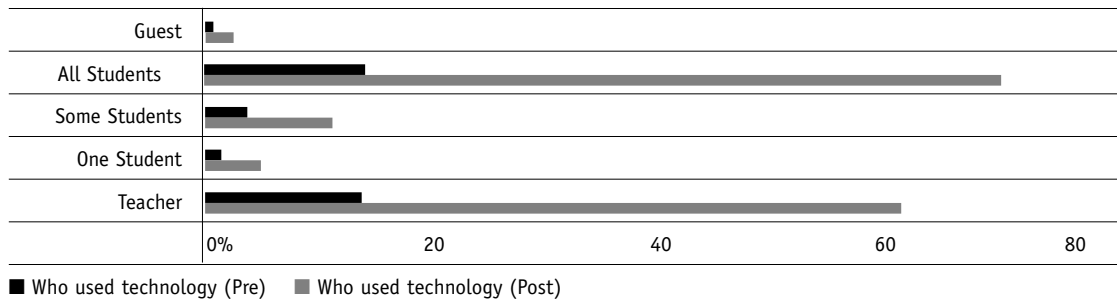
RETA Impact on Practice

A goal of the RETA program is to help teachers understand the role that technology can play in student learning and to integrate these new tools into their teaching practice. Results from our analysis of evaluation data show that RETA teachers altered their own and their students' use of and experience with technology in a number of ways. Teachers who participate in RETA report that they have changed their teaching practice as a result of their exposure to RETA. An analysis of matched pre- and post-surveys (n=419) shows that RETA teachers made significant (at .01 level) changes in a number of areas, demonstrating their increased confidence in the use of technology as an educational tool. For example, teachers increased their own use of email and the World Wide Web; they increased the time their students spent working with technology; they altered their own practice with regard to technology activities in the classroom by assuming the role of facilitator rather than leader or observer; they increased their activities as school or community technology leaders; and increased their participation in professional conferences as attendees and as presenters.

Our findings indicate that participants in the RETA program tend to increase their use of various types of hardware and software over time. At the same time, RETA teachers also altered who used technology during classroom activities and lessons. When teachers were asked to describe different

aspects of a technology lesson or activity they have engaged in with their students, the data show significant increases in the number of teachers who involved all their students in technology activities, as well as an increase in teachers' own use of technology during lessons (Figure 3).

Figure 3. Who used technology in this lesson or activity?



These findings create a clear picture of educators increasing the role that technology plays in their classrooms in multiple ways: they have increased the types of technology being used; they have exposed their students to a wider range of technology; and they themselves have become more engaged in using technology during the school day. In addition, we are finding statistically significant indications that participation in RETA contributes to teachers altering how they teach lessons in classrooms, with teachers increasingly acting as facilitators during lessons or activities, and teachers increasingly using a group-work model for student participation.

The data also show significant increases in the number of teachers using a range of technologies with their students (see Figure 4), and show significant increases in the number of teachers using a variety of software applications with their students (see Figure 5).

Figure 4. Percent of RETA teachers who use a technology tool as measured by pre- and post-survey

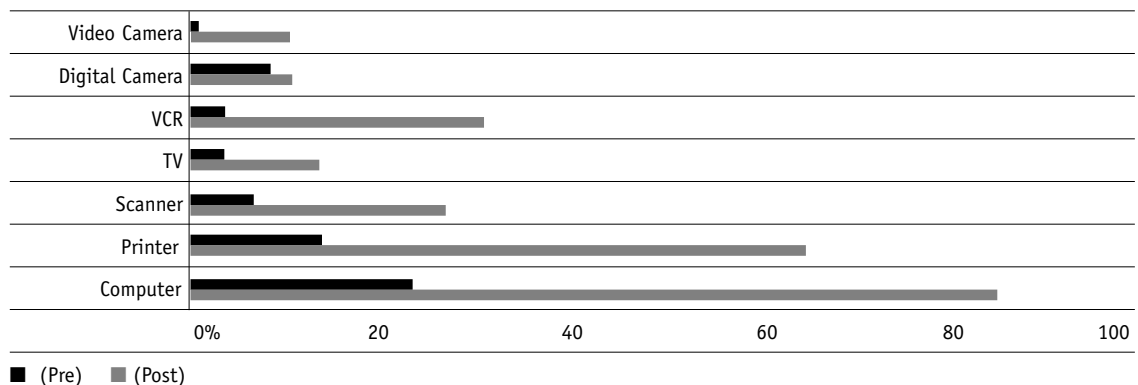
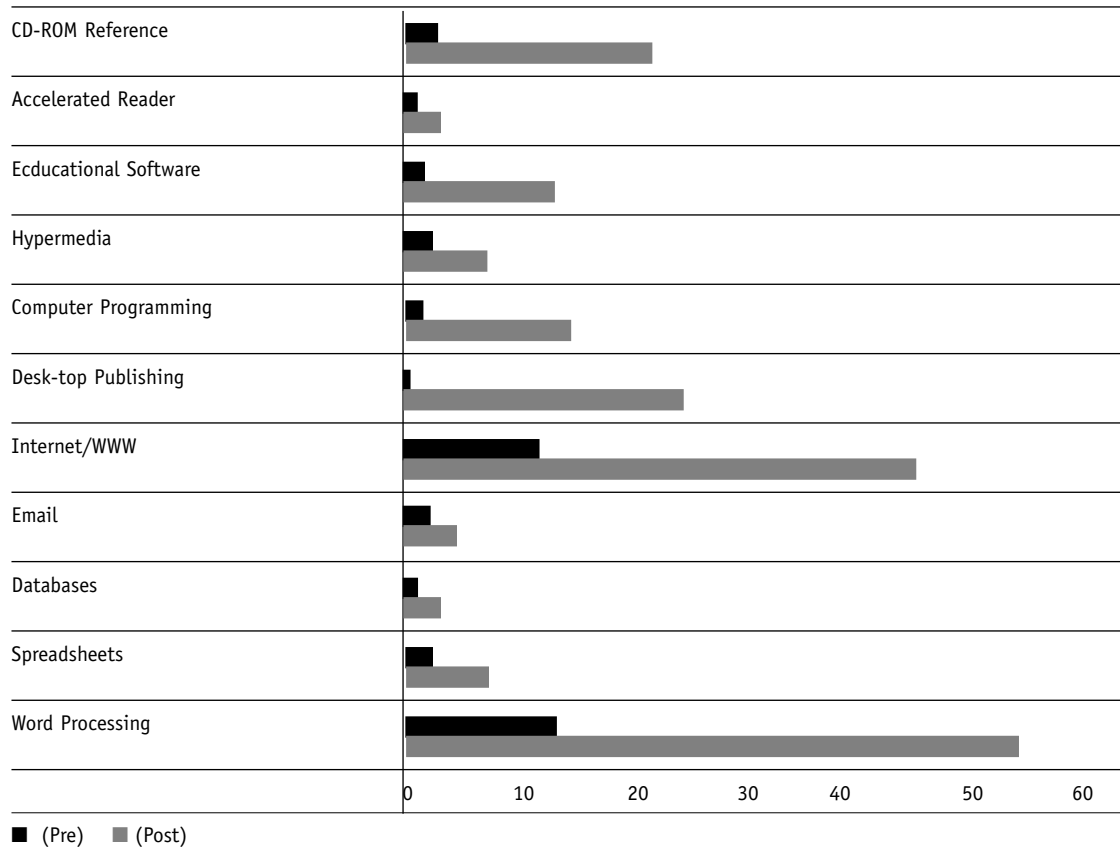


Figure 5 : Percent of RETA teachers who use a software package as measured by pre - and post - survey



In accordance with our findings from the past three years, RETA teachers' collegial behaviors change over the course of the year. Teachers provided more hardware and software assistance to their peers (Figures 6 & 7), and increased their participation in discussions about curriculum design and technology issues with colleagues (Figures 8 & 9).

Figure 6. RETA teachers address hardware problems for other teachers

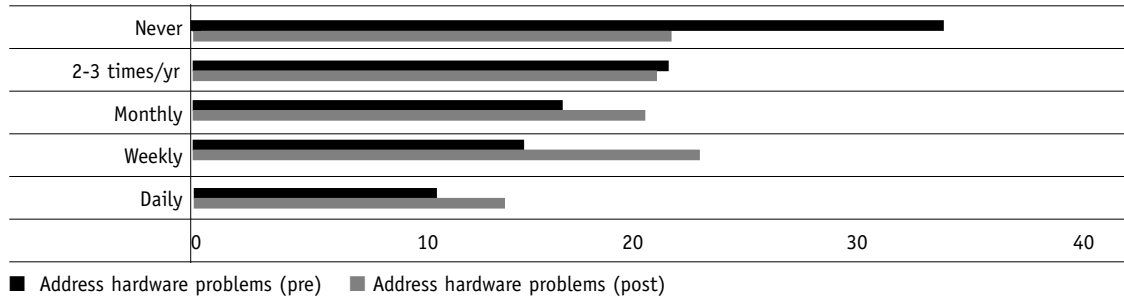


Figure 7. RETA teachers assisting colleagues with software problems

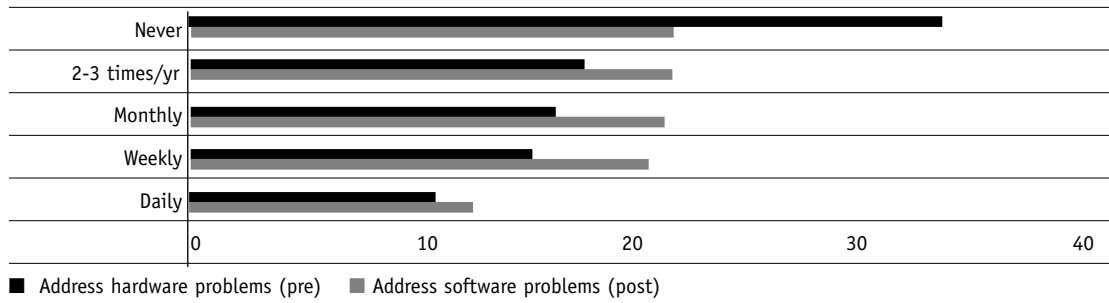


Figure 8: RETA teachers discussing curriculum design and technology with colleagues

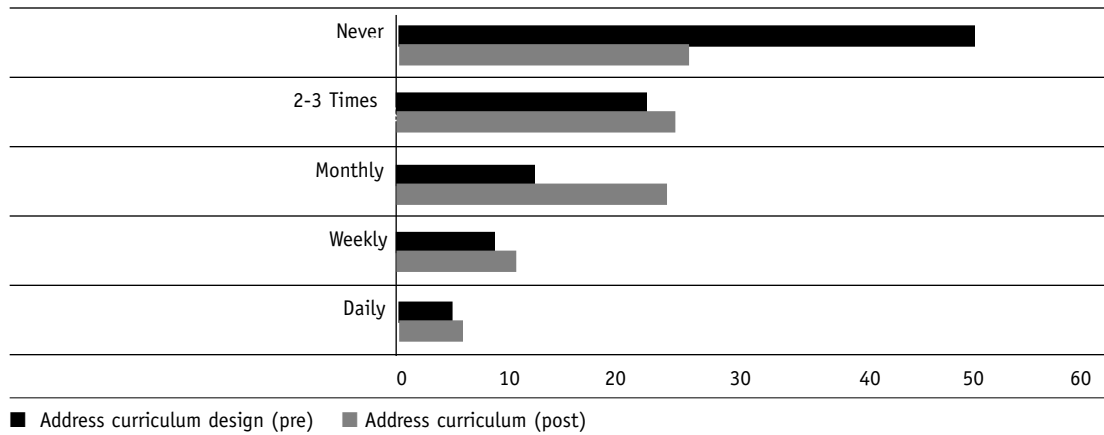
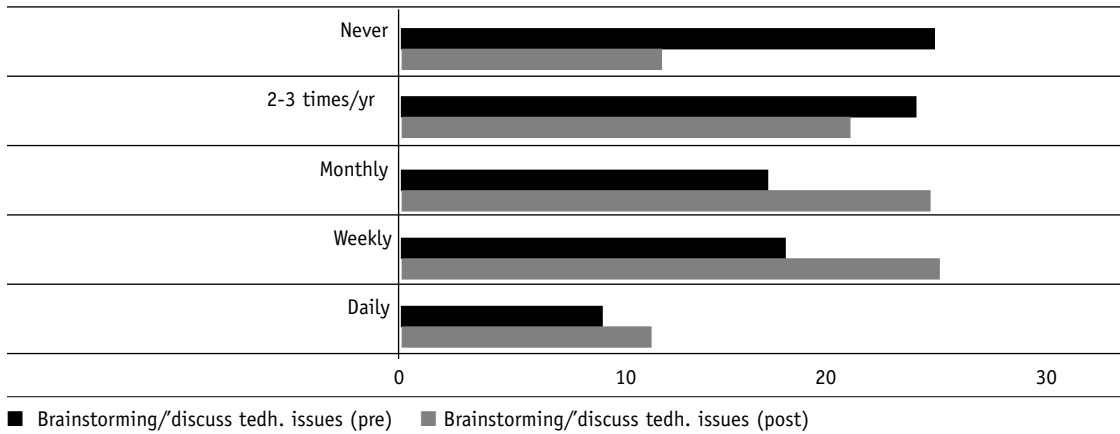


Figure 9: RETA teachers brainstorming/discussing issues relating to technology with others



The findings above regarding teacher change in technology use, teacher practice and collegial behavior all suggest that RETA is altering participants' professional lives. These findings are particularly interesting because they confirm information gathered from interviews with participants who repeatedly pointed to the RETA program as the driving force in the development of their confidence in using technology and in sharing this knowledge with others.

This issue was raised by several women who stated that, as Hispanic women, the experience of participating in RETA was very empowering and has opened doors that might not have been acces-

sible to them without the confidence and knowledge they gained from RETA. This trend in growing confidence and in becoming more active at the school level is also mirrored in evidence showing that RETA participants played a significant role in developing district proposals for state funds available in the form of Technology Literacy Challenge Fund (TLCF) grants. More information regarding the TLCF grants is available in the Leadership section below. Several other findings have also been confirmed through multiple data sources.

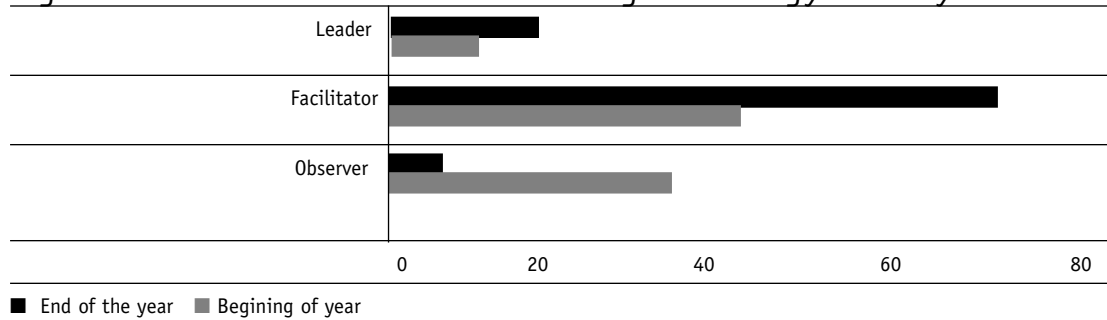
Structured Observations

One of the goals of this year's evaluation was to determine whether or not the data collected through pre- and post-surveys (often described as "self-report data" because teachers are reporting on their own behavior) truly represent what is taking place in classrooms. To determine this we devised a series of structured observations. These involved three one- to two-hour-long visits with ten teachers in six different schools across the state of New Mexico at the beginning, middle and end of the 2001-02 school year. Four of these teachers were repeat RETA participants, and six were taking RETA for the first time in the year we observed them. The six schools we visited were diverse across a number of dimensions. One school was a K-8 Bureau of Indian Affairs school, another was a suburban elementary school, one was an urban high school, two were urban middle schools, and one was a rural intermediate school. Two of the classes we observed were bilingual. Three of the schools in the study were located in the southern part of the state, two were in the Albuquerque area, and one was located in the northern part of the state.

Our observation protocol was modeled after the Apple Classroom of Tomorrow (ACOT) observation protocol and the Milken Professional Competency Continuum (PCC), in both content and technique. The protocol stipulates that every five minutes the observer record characteristics of the classroom activity, such as the structure of the activities and lessons, the student and teacher roles, and the technologies and applications used. These observations were used not only to gain a better understanding of what was taking place in the classrooms of RETA participants, but also to help us validate some of the items on our pre- and post-survey. There was a section on the surveys that mirrored the items in the observation protocol. In our analysis of the structured observational data, we not only have data that corroborate much of the self-report data about technology integration from the survey, but we also have evidence of changes in the technology integration practices of the observed teachers over time.

At the beginning of the year, some of the teachers we observed took a hands-off approach to teaching with technology. Once the students had their assignment, teachers stepped back and allowed them to work with little involvement on their part. Over the course of the year, however, more of the teachers began taking on the role of facilitator rather than observer, becoming more involved with the activity students were engaged in and working one-on-one with individuals and small groups (See Figure 10)

Figure 10: Observed teacher role during technology activity



In addition to the changing roles of teachers, the lesson format used by the teachers we observed also changed over time. In the course of the year, the observed lessons tended to become structured more around labs or activities than lectures or deskwork (see Figure 11). The change in the way the observed lessons were structured was even more dramatic for teachers who were new RETA participants (see Figure 12).

Figure 11. Change in lesson format over year for all teachers observed

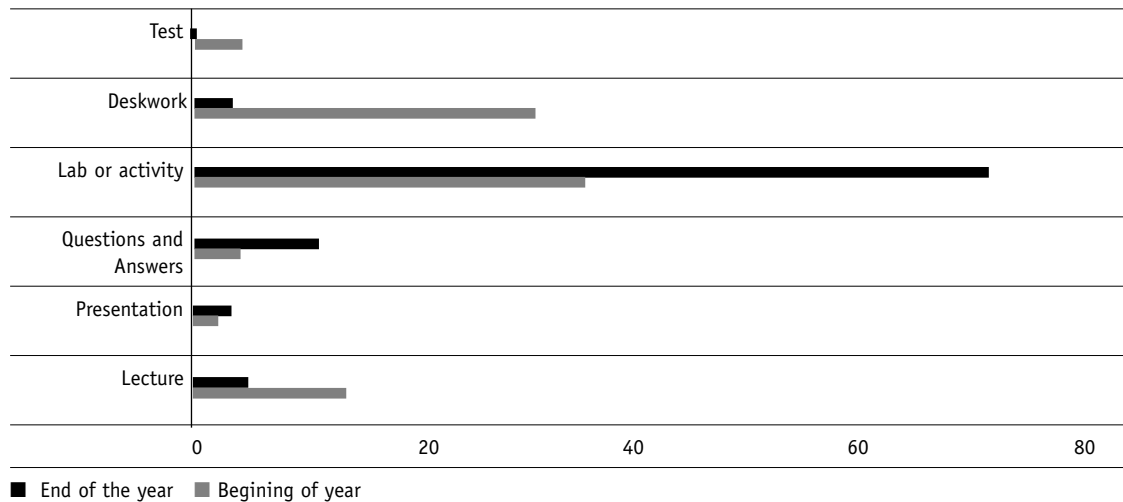
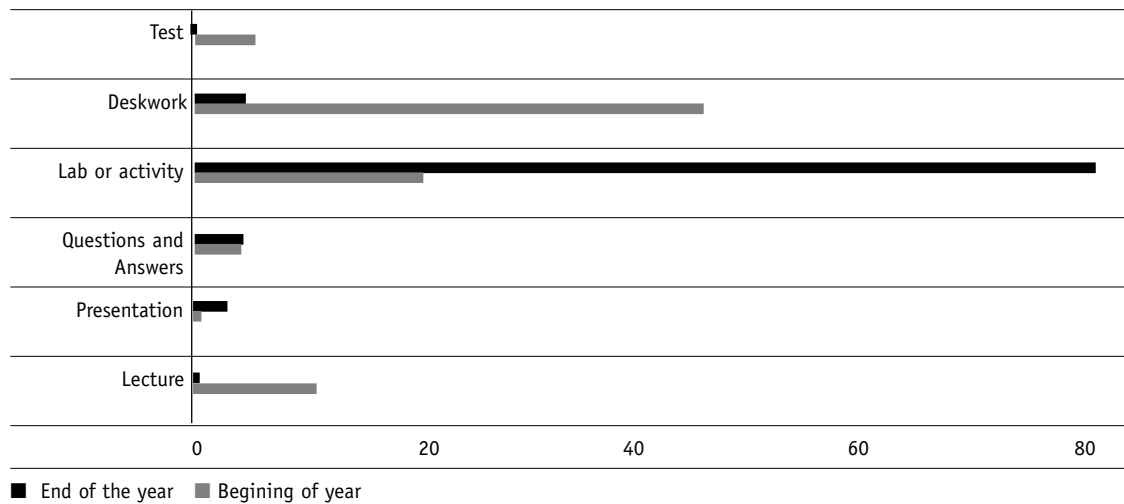


Figure 12. Change in lesson format over year for new RETA participants



Over the course of the year, lessons involving technology were more likely to involve all the students in a class rather than just one or some students (see Figure 13). Again, the change over time in the number of students in a class who participated in technology use was more dramatic for those teachers participating in RETA for the first time (see Figure 14). Early in the year, many of the new RETA participants we observed used computers as an additional tool for students to look up information for completing worksheets or typing up their work. These teachers would have one or a few students at a time working quietly on the few classroom computers. By the end of the year, teachers tended to have a larger number of their students working on computers, either independently or in small groups, engaging in activities and lessons that had the students creating work products with technology.

Figure 13. Change in number of teachers who used technology in the observed lesson for all teachers observed

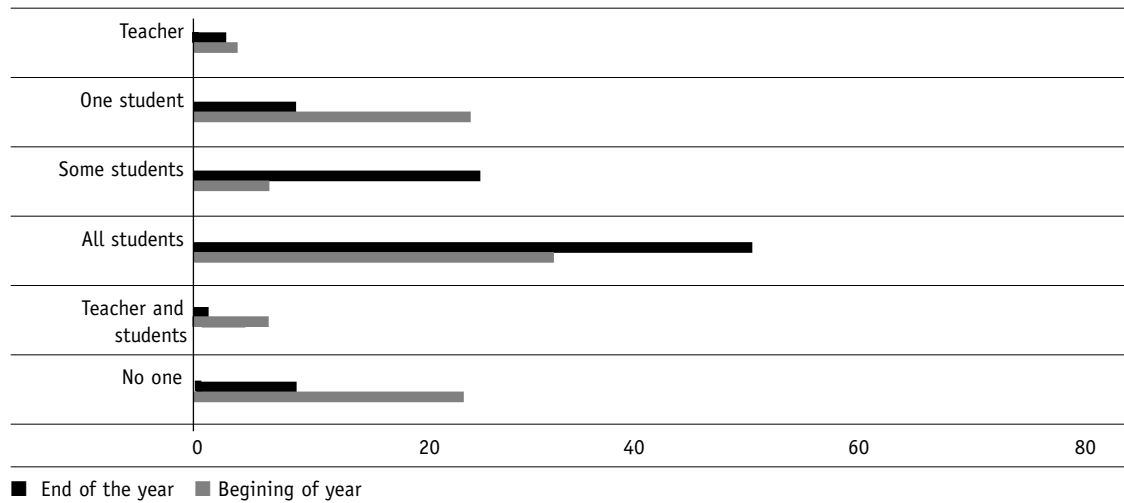
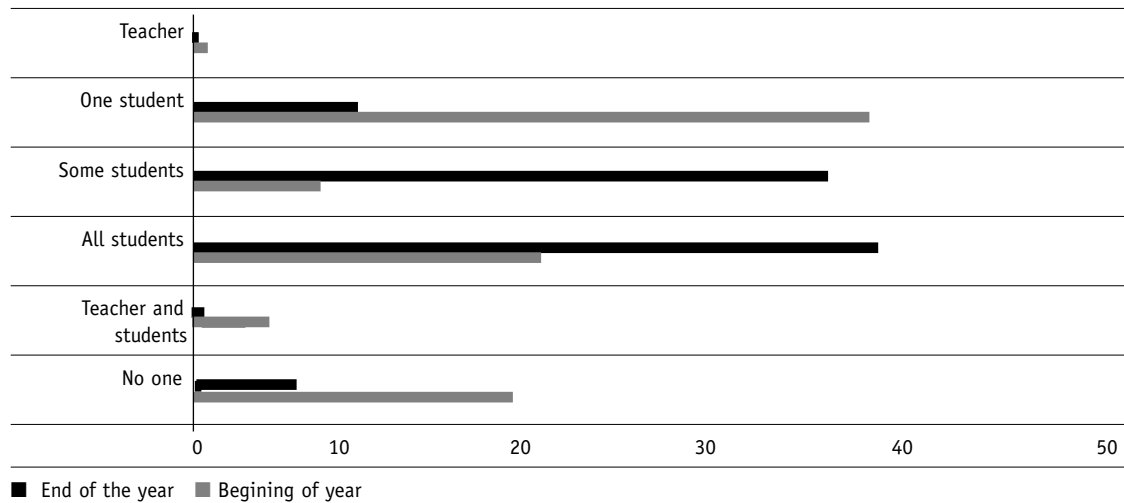


Figure 14. Change in who used technology in lesson for teachers who were new to RETA



Gender Differences

Findings from the pre- and post-surveys were analyzed by gender and ethnicity. While no significant findings were present based on ethnicity, some interesting differences were found based on gender.

In the pre-survey men rated their experience integrating technology at significantly higher levels than women. In the pre-survey, men also reported assisting other teachers with technical problems more than women and providing professional development more than women. Each of these gaps closed in the post-survey, where no significant differences between men and women on these same items were found. In addition, in the pre-survey women used the web more often in their teaching than men, while men used spreadsheets, databases and email in their teaching more often than women. Again, these differences disappeared in the post-survey. Two interesting and significant shifts in post-survey data are notable: men showed an increase in the use of programming, and women showed an increase in the use of educational software. Each of these differences was not evident in the pre-surveys.

These findings indicate that generally, the RETA program is addressing some of the more common expectations that educators, and adults in general, have regarding technology: men are more comfortable using technology in all its aspects, from software to hardware. Once educators have participated in RETA they tend to have a more balanced use of technology and a strong sense of competence with technology, across genders.

Open-ended Questions

While the pre- and post-surveys asked teachers to answer multiple-choice questions regarding their teaching practice, use of technology, and integration of new technologies into their classroom activities, in the post-survey teachers were also asked to respond to four open-ended questions. These questions were designed to explore two aspects of the RETA experience:

- The kinds of specific activities that teachers engaged in as a result of their RETA experiences
- The aspects of the RETA program that teachers found valuable or not valuable.

RETA teachers responded with a broad range of information regarding their classroom activities and the specific applications and technologies that they used. Of the 498 respondents completing the post-survey, approximately 75% reported using a specific software package (such as KidPicks or Hyperstudio) or hardware (such as a video camera or scanner) when asked to describe the RETA modules used in their classrooms. Participants also identified nine different RETA curriculum modules by name, and indicated that they used the RETA modules while teaching a range of subjects including:

- Art
- Career Exploration

- Gifted and Talented activities
- Health
- History
- Language Arts
- Language
- Mathematics
- Reading
- Science
- Social Studies
- Special Education activities

A small percentage (less than 5%) indicated that they were unable to use any of the RETA training or modules. Some said they had no classrooms in which to implement these activities, and others found the RETA workshops provided no useful information at all. Eight percent of teachers did not respond to this question.

Teachers were also asked to identify what they found to be the most useful aspects of the RETA workshops. Many indicated that all aspects of the workshops were useful, with others identifying aspects such as:

- Hands-on nature of the workshops
- Opportunity to collaborate with colleagues
- Opportunity to interact with peers
- Supportive nature of the instructors
- Opportunity to learn something new

The majority of teachers suggested a range of other benefits of the RETA program, such as the opportunity to try out a particular software program, or to practice using hardware such as a digital camera. Six percent of teachers did not respond to this question.

Teachers were asked to identify aspects of the RETA program that could be changed to improve the program. Response ranged from very general suggestions such as:

- More hands-on activities
- Better-equipped labs for workshops

- Better-prepared instructors
- More content for younger grades
- More information presented in text format
- Workshops scheduled more closely together
- More participant control over what instructors teach

to much more specific suggestions such as:

- Lessons available for Special Education teachers
- Workshops that address specific age groups
- Clearly labeled binders that provide step-by-step instructions for activities
- More mini-lessons at the start of each workshops.

Thirty-three percent of respondents either did not answer this question, or said they had no changes to suggest, and most responses included positive statements about the workshop content or the RETA program in general.

POLICY AND LEADERSHIP

The RETA program has had a significant impact in the education leadership arena. The program has given many educators the impetus to become active within their school and district communities. RETA teachers provide professional development to colleagues, offer technical support, contribute to technology planning and curriculum development, and interact with a statewide network of interested, active educators grappling with similar problems related to education and technology. In addition, several members of the RETA community have gone on to work at the State Department in the office of Curriculum, Instruction and Technology, while many others have pursued funding for other technology-related efforts. Teachers participating in RETA have also increased their own professional development activities by contributing to and attending professional conferences, and by taking on leadership roles in other professional development programs, such as Marco Polo and Intel Teach to the Future.

State Technology Policy

During its four years of operation, the RETA program's administrative staff and instructors have engaged in activities that directly and indirectly affect policy actions with regard to technology and education. As part of the evaluation effort, key individuals in the education policy arena in the state of New Mexico were interviewed to gather evidence of program impact in this area. Individuals interviewed included:

- Cynthia Nava, Senator, Member of State Legislature, Chair of Senate Education Committee, Chair of Legislative Education Study Committee, Assistant Superintendent at Gadsden School District
- Michael Davis, State Superintendent of Education
- Steven Sanchez, Director of Curriculum, Instruction and Technology, New Mexico Department of Education
- Sharon Dogruel, Program Manager, Curriculum and Learning Instruction, New Mexico Department of Education

In addition, activities such as presentations to the state legislature by RETA participants, participation on statewide technology planning committees and other activities engage in by RETA staff and participants that relate to policy have been documented.

District Technology Plans: Overall, each policy leader listed above indicated that the RETA program has impacted state and local policy regarding integrating technology into education in multiple ways. All interviewees identified the development of district technology plans as the most tangible evidence of RETA's role in the state. Nationwide, states have been moving toward requiring schools and districts to create technology plans. The RETA program in New Mexico provided sup-

port for this general movement in several ways:

- It equipped a large and geographically distributed number of teachers in the state with the pedagogical knowledge, planning skills and technical expertise to design and write these plans.
- It helped to lay the groundwork for more equitable funding for smaller districts, increasing incentives for all districts to complete their plans in order to compete for state technology funding.
- It helped to inform state-department-level staff about what criteria to use when judging district technology plans (the state department continues to invite RETA instructors to review district technology plans).
- RETA staff and participants were active members of the statewide Education Technology Committee.

Teacher technology standards: RETA and the doctoral cohort that works directly with RETA staff and New Mexico State University, played a key role in developing criteria for teacher certification in the use and integration of technology. RETA participants and staff drafted a set of criteria that were reviewed by state-level education policy individuals. These criteria were put into place, creating a significant driving force in the preparation of educators with regard to their technological skill and knowledge.

Creating a sense of collaboration and collegiality: While no policy directs funded programs within New Mexico to collaborate with each other, all interviewees cited RETA as setting a standard for sharing resources, working collaboratively, and creating strong statewide networks to support educators in their efforts to improve instruction. One interviewee stated: “They’ve set the gold standard for professional development” that other programs must now live up to. Another stated: “In terms of infrastructure, a lot of positive energy was in the state addressing how to get hardware into the school. But the bigger problem was what do you do once you do get the technology. New Mexico didn’t have a good approach and that is where RETA stepped in, developing confidence and collegial relationships around technology.”

Preparing for the future: A key issue raised by three of the four interviewees concerns the issue of preparing teachers for what may be required of them in the future. Interviewees discussed the new pressures on teachers, schools and districts to make use of data that are often available via computers. They felt that RETA teachers were better prepared to undertake this task. “RETA [is] creating a group of teachers who are capable of taking part in the next phase of education,” said Michael Davis, the State Superintendent of Education. Given their exposure to and experience with a range of technologies, RETA participants can bring to their schools and districts a conceptual understanding of how to manipulate information using technology.

E-Rate: New Mexico has benefited greatly from E-Rate funding. However, according to Senator Nava, without RETA providing training and helping to inform educators about the importance of

technology to New Mexico's students, and without its guidance in the development of local technology plans, the state would not have been so successful in taking advantage of this funding opportunity.

Encouraging and supporting women and minorities: Several interviewees stated that the RETA program was particularly notable for its emphasis on encouraging educators to pursue technology understanding and integration among populations that are traditionally not expected to excel with technology. In addition, they noted that the RETA program not only supports a diverse group of participants to engage with technology, but it "practices what it preaches" by consistently recruiting a diverse group of expert educators in the areas of technology to present to participants. While not explicitly linked to policy, this emphasis on diversity within education technology has helped to disseminate the message that technology is a key ingredient in the successful education of all students, not just those already skilled and knowledgeable about this field.

Making better use of state funding for technology: RETA staff worked with the state Department of Education to restructure the distribution of statewide technology funds to schools and districts. The new approach provides a flat amount of funding to schools and districts that have very small student populations and were significantly disadvantaged within the earlier system, which pegged a dollar amount to enrollment. "RETA switched the funding to a more reasonable and systematic use of technology," Senator Nava reported. "Rather than looking at technology as a line item on the budget we make sure that it is contributing to students' experiences."

Other issues addressed with regard to policy include the development of internal capacity at the state and local level to support technology and to engage appropriate pedagogical approaches to integrating technology into classrooms at all grade levels and for all abilities. RETA's role in helping educators at all levels understand what technology can do in an educational setting was made clear in several interviews. "RETA has affected my ability as a state policymaker to inform the state legislature about the real application of education technology that goes beyond just acquisition," said Senator Nava.

Development of Educational Technology Leaders

Another way to understand the impact of the RETA program is by looking at the way in which RETA has helped build local leadership. This can be seen most dramatically in the stories of the people who have become leaders.

Diane was an elementary school teacher in a rural area of New Mexico. Four years ago her district was contacted by the Santa Fe Regional Resource Center, and she participated in RETA with a few other teachers from her district. A year later she became an instructor. Already skilled with technology before becoming involved with RETA, Diane felt that the most valuable lessons she learned from RETA, both as a participant and an instructor, were pedagogical.

I was the "elementary teacher of the year" last year for the state. RETA got me on the road

(to teacher of the year) because they teach you good teaching practices. All I learned through RETA—letting kids know what you want ahead of time, rubrics, writing good lessons plans that address higher-order thinking skills, doing multi-sensory activities that take advantage of multimedia and are interactive, problem solving—all these can be done without technology, but these are the main things I've learned.

While working as an instructor, Diane became increasingly aware of the lack of a comprehensive approach to technology professional development in her district and other nearby districts.

We had a few people who were trained (in technology) and they were trying to train others on their own time with their own resources and that did not work very well.... The digital divide was in full swing, based on who had the resources. If you had someone trained in the building it was fine, if not kids suffered. Seeing this rift, I thought something had to happen. That's why we wrote the grant.

Diane decided to submit a grant proposal to the state's Technology Literacy Challenge Fund (TLCF) program. She developed a project, called "Hand-in-Hand," that would help a consortium of districts in her area build technology expertise and leadership in the schools. In her view, she would never have written this proposal without the support of RETA.

RETA made me believe I could apply for the TLCF grant and run the Hand-in-Hand program. They said, "you can do this." I knew they would support me. With that knowledge I ventured forth.... When you write a grant for technology integration you need several components, hardware, software and training, so often grants are written for one or two of those. Because of RETA's participation, we were able to have a very well-rounded grant. We leveraged as many funds as possible.... RETA provided the instructors for our follow-up sessions. RETA gave us information, gave us over \$550 of software. I needed instructors for our summer institute and Carmen told me about RETA people who could be instructors. Carmen and [the Santa Fe RRC coordinator] helped in writing the grant. They took my draft and refined it. RETA gave money for stipends for people and three hours credit from NMSU, which meant that we could use TLCF money for equipment.... RETA also gave administrators Office 2000.

Diane explained that RETA not only helped her in the grant-writing process but also continued to support her as she administered the program. "RETA is great. I can call anybody. If I need someone involved with online learning I just call Carmen or [the RRC coordinator] and they can connect me. The networking is the best part of RETA and is what is going to sustain this. I think of it as a net. How can you fall if you have this structure under you?" Along with leveraging materials and instructors from RETA, Diane drew upon the RETA curriculum modules and the overall RETA model of developing leadership in the design of the Hand-in-Hand program.

I took the best I could find and fortunately I have good models. We have six follow-up sessions, which are like RETA. We actually use RETA modules for some of these sessions. The instructors use RETA modules and adapt them to meet the needs of the group. We do

WebQuests, the constructivist module, trying to model a one-computer classroom. There's a unit on that. We do the digital quilt and the video one and the public service announcement.... The expectation was that the teachers who took the training would become tech leaders in school.

The Hand-in-Hand program has had a significant impact on the way participating districts are approaching technology. Diane reported that:

[Our district] took on the model that was developed by the Hand in Hand people. It has become the technology plan for the district. It's based on student learning, which is different from before, when the tech plan was based on hardware and wiring. Now it's based on student learning and what we need to make that happen. Hand-in-Hand took care of training the mentoring teachers in each building. [Our district] received a local TLCF grant to flesh out the building trainer aspect and to develop the building-level trainer. That's how we're addressing sustainability. After this year TCF will be gone but we will have a building trainer in place, and when RETA goes away we will have mentors and building trainers and will sustain the training.

Diane's story shows how a statewide program can filter to a local level. By developing leadership among participants, RETA extended its reach. Local leaders could identify local needs and develop structures that could meet those needs. When a larger-scale effort, such as RETA, provides support, local leaders know they can access the resources and expertise to help them initiate successful local programs.

Another RETA participant has become a leader in educational technology in a relatively large school district outside of Albuquerque. Maria described her progression into a district leader.

Before RETA I was a classroom teacher, then my position became staff developer. I was hoping to get involved with that. I got the skills from RETA and leveraged that to become director of educational technology in [my] school district.... This was a new position created for me in the district.... The need was there for professional development. We did have a tech plan but the emphasis was technical and infrastructure, so that was the kind of training going on.... The skills are important but that shouldn't be the main emphasis. [Technology] should be tied with something relevant and tied to lessons and standards.

In her new role Maria had to pursue external funding, but in the beginning she met with little success. "When I was working with my predecessor we would write grants and they wouldn't get funded. I didn't know what we were going to do." However, once she had gained the power in her district to revamp the district's approach to technology, her proposals were more successful. "When the district gave me the leverage to write the grants in terms of what I felt the need was regarding student learning, we started to get funded. Now the whole philosophy of why we're applying for grants is in line with everything else the district is trying to do." Since she has been able to connect her grant proposals to goals for student learning, her district has been awarded

funds and services from the state Technology Literacy Challenge Fund (TLCF), the Intel Teach to the Future program, the Intel Computer Clubhouse program, and the PBS Teacher Line grant.

Maria's leadership now extends beyond her district. "I sit on the Council on Technology and Education, a state committee. This group makes recommendations to the State Department of Education. We say what the state technology plan should include, the projects that the state should support. Districts send technology plans to the State Department of Education and we decide how to evaluate them."

Taking her cue from the RETA program, Maria created a district technology professional development program designed to build school-level leaders. A group of teachers would receive training from the district and then return to their schools to provide staff development in technology integration. "RETA was in line with my goals for the district and it gave me support in my vision and the support structure to carry out the goals and vision. [RETA] is where the idea of the School Technology Resource Team (STRT) came from. The STRT people work with their principals and develop technology goals [for their schools]."

The first year of the STRT program was funded through a state TLCF grant, but now the program has become institutionalized as part of the district technology plan and is funded through the district. With the help of RETA, Maria is expanding the reach of the STRT program. "The RETA project has supported me in helping me use the model and we've worked with other districts and consortia and brought the model back to their sites."

The strength of the RETA program, and by extension the STRT program, is that the training they provide does not end with the programs. Instead, the emphasis on leadership means that program participants learn how to use their knowledge to influence policy and practice in their educational communities. Maria used the example of one teacher, Alison, who participated in STRT. Alison admitted that not only did she know very little about technology before she got involved with the STRT team, but she was also not a leader in her school. However, she did volunteer to work on the school's technology committee, which brought her in contact with Maria, who then asked her to join STRT. Maria described Alison's transformation into a school and district leader.

Today she's delivering staff development in her school, has presented at state conferences and her students do, too. She's doing a literacy portfolio and it's a model for other districts. She's an Intel Master Teacher and she's participating in the PBS Teacher Line project. She's helping me rewrite the technology plan for the district. She's also been asked by another district in Texas to do workshops for them. In three years she's gone from a teacher in the closet to a confident person, understanding curriculum tied to standards, technology, assessment, and staff development. I think what got her going was her STRT team experience. [Team members] take the ideas and run with them.

One project that Alison initiated in her elementary school was a literacy portfolio. She began with students in her own classroom, who created portfolios on computers that contained student writ-

ing samples and videos of the students reading at different points during the year. These portfolios were then presented to parents and school and district administrators. Maria, who attended the presentation, recalled the experience. "It was a valuable experience for students. The students saw their progress. They would look at their writing and see the difference. They heard themselves read from the beginning of the year and they were amazed at how much they improved. The confidence it gave them, it took them to the next level. The principal then said, 'Now we must have this for all students in the school.'"

The above examples of leadership illustrate the effectiveness of the RETA model. The kind of encouragement and support that participants and instructors receive inspires some educators to believe their efforts can have an impact not only on their classrooms but also on their schools, districts, and even on state educational technology policy. This approach to professional development creates a network of knowledgeable professionals with the confidence and leadership experience to sustain the RETA program's goals in the future.

Participant Perspectives on the RETA Model

In addition to interviewing state policymakers and technology leaders, we conducted a series of interviews with a group of participants in the RETA program. These were conducted with:

- Ten teachers whose classroom activities were observed as part of the structured observations described above. These teachers were interviewed individually after a final observation in their classrooms in the spring 2002.
- Eleven teachers/educators who are RETA instructors and have been involved in the program for at least two years. The interviews took place in small groups in a focus-group format during the program's annual Instructor Orientation in September 2001. Nine of these instructors continue to have classroom responsibilities; two are in administrative positions and do not

Teachers were asked to talk about their experiences within the RETA program, and to talk about whether or not these experiences had any impact on their classroom activities and on the lives of their students. Many of the changes teachers identified in their teaching mirror those found in the pre- and post-survey findings and in the classroom observation findings. Teachers indicated that the RETA program greatly impacted their use of technology in multiple ways by giving them:

- Confidence to try new things with technology
- Ideas about how to integrate technology
- Examples of ways to use specific applications within curriculum modules
- Curriculum modules aligned to the state standards
- Hands-on experiences with new and emerging technologies and software

- A community of peers with whom to share knowledge
- A renewed sense of energy and enthusiasm in their work with students.

Many of these teachers talked about how the RETA program has altered their perceptions of themselves as professionals, and they identified several aspects of the RETA program that contributed to this, including:

- The expectation that all teachers can benefit from professional development
- The belief that technology has a role in the lives of all children regardless of language, age, or economic status.
- RETA's "practice what you preach" method of modeling pedagogical approaches during instructor workshops that instructors are then expected to use when presenting RETA workshops to others
- The belief that all teachers are professionals and deserve appropriate recognition and compensation for their work.
- The expectation that all participants, regardless of gender, ethnicity or language, can learn to use technology successfully.

Many interviewees acknowledged that other professional development efforts address one or some of the items listed above. They stated that in contrast, the RETA program appeared to try to address all these issues, and in doing so created an environment that allowed educators to feel confident and capable of pursuing new and more challenging activities within their classrooms, schools, and communities that involved technology and education.

Technology Plans and Grant Proposals

Another way in which the RETA program's impact on New Mexico's schools can be measured is by looking at district and consortia technology plans submitted to the New Mexico State Department of Education (NMSDE) and proposals submitted to the NMSDE for Technology Literacy Challenge Fund (TLCF) grants. The New Mexico TLCF is intended to fund school districts to help them meet their most important educational technology needs — especially districts with high rates of poverty and those that demonstrate the greatest need for educational technology. TLCF's goal is to build synergy between a wide array of partnerships and to advance district Educational Plans for Student Success (EPSS) through integrating learning technologies into all content areas in support of enhanced teaching and learning for all students. Grant proposals that identify partnership organizations that can help the districts leverage funds received from the state are considered stronger by the Department of Education and more likely to be accepted.

We asked a researcher from New Mexico State University to review the TLCF grant proposals and the district technology plans at the NMSDE. Using a series of questions provided by CCT, this researcher examined all of the 1999-2000 and 2000-01 TLCF grant proposals and technology plans

on file at the NMSDE to see whether they mentioned RETA or the Regional Resource Centers (RRCs).

In the 2000-01 grant period, 61 different school districts submitted 68 grant proposals, 42 of which (62%) mentioned RETA or an RRC. In 2000-01, 48 districts were awarded TLCF Grants. Two districts, Albuquerque Public Schools and Moriarity Public Schools, received two separate grants each. Two other applications were a consortium of several small districts who proposed to work together. This resulted in 51 successful applications, of which, 32 proposals, or 63%, directly mentioned the district's involvement with the RETA program. In addition, 27 of these proposals mentioned RETA RRCs or other programs affiliated with RETA, such as Hand-in-Hand and Walk the Talk.

In the technology plans submitted by districts for the 2000-01 school year, 36 of the 82 districts mentioned RETA directly or an RRC. A review of TLCF proposals that includes those from the previous year indicates that 90% of the districts mention RETA or an RRC in either the 2000 TLCF proposal, the 1999 TLCF proposal, subsequent reports, or their technology plan for that time period. Out of 51 applications over successive years, only 5 did not mention RETA or an RRC.

District leveraging of RETA or RRC resources took many forms. Some made use of RETA- or RRC-trained teachers to serve as peer mentors in schools; some designated RETA as the professional development provider for the project; some reported that RETA, an RRC, or an affiliated program such as Hand-in-Hand or Walk the Talk was providing software, hardware, or other resources; and some indicated that they would be using RETA curriculum modules in their training.

The districts mentioning RETA or an RRC are diverse across many dimensions. They range from a rural district with 57 students to the Albuquerque Public School District, with over 87,000 students, with most districts serving fewer than 5,000 students. The districts mentioning RETA or an RRC were also diverse in terms of the percentage of Hispanic and Native American students and percentage of student eligible for free and reduced-price lunch. Districts citing RETA in their grant proposals and technology plans had as few as 17% minority students to as many as 96%, with the majority (71%) having more than 50% of the student population from minority groups. These same districts had as few as 23% of the student population eligible for free/reduced-price lunch and as many as 94.7% eligible, with 77% of the districts citing RETA in their proposals or technology plans having 50% or more of their students eligible for free/reduced-price lunch.

Not only did districts explicitly mention RETA or an RRC in their grant proposals and technology plans, they also drew on elements of the RETA model to describe their own approach to educational technology. This indicates that districts recognize both the value of RETA itself and the value of the program's philosophy toward technology integration and professional development. Twenty-eight of the districts described in their grant proposals that they would use the TLCF monies to train teachers who could serve as peer mentors or technology leaders in their schools; 41 proposals emphasized integration of technology into the curriculum as opposed to skills training or building district infrastructure. Forty-three districts provided the staff or schools with hardware; 17 said

they would purchase materials such as software for teachers; and 34 provided stipends for teachers to participate in professional development workshops.

Other Funding Pursued by RETA Participants and Instructors

One way in which educational and technology leadership is demonstrated is through pursuit of external funding for programs and resources. We wanted to understand whether teachers involved in RETA were taking on grant-writing responsibilities in their communities. In our pre- and post-surveys, we asked respondents whether they had helped their schools or districts apply for grants or other forms of educational funding, and if they had, to describe them. The survey showed that 30% of respondents had helped their schools or districts apply for funding from various external sources. Instructors and repeat RETA participants were significantly (at the .01 level) more likely to have applied for grants than first year participants, and the longer a teacher had been involved with RETA the more likely he/she was to have written a grant. This finding suggests that involvement in RETA inspires educators to take on increased technology leadership responsibilities. Not only will the specific grants they receive benefit RETA teachers' schools and districts, but the grant-writing skills these educators have developed will enable them to continue to help their educational communities tap into funding opportunities in the future. Examples of grants RETA instructors and participants have applied for and, in many cases, received, include:

- Corporate grants (from companies such as Intel, Oracle, Apple, Coca Cola)
- Federal grants (such as E-Rate, PT3, Goals 2000)
- State grants (such as TLCF)
- Local bond issues
- Los Alamos National Laboratory grants
- Grants that support Native American education (such as the Navajo Nations program, Four Directions program)
- Foundation/nonprofit grants (McCune Foundation, Albuquerque Community Foundation, National Geographic Society).

Partnerships

RETA continues to sustain the partnerships it has established over the past four years with a host of educational organizations and seeks to develop new partnerships in order to most effectively leverage its own and its partners' resources. RETA partnerships help the program meet a number of different goals, including providing professional development, creating quality curricula, building leadership, and influencing state educational technology policy. Examples of some of these important partnerships follow.

RETA's professional development partnerships:

- Southwest Education Development Laboratory (SEDL)
- Gadsden Independent School District
- Hand-in-Hand — Estancia/Moriarty
- RESPECTT – Albuquerque Public Schools
- Tech Camp — Cuba Public Schools
- Bernalillo Consortium — Bernalillo, Taos Municipal Schools, and Vaughn Municipal Schools
- Walk the Talk Training facilitated through the RETA/ENMU RRC)
- Bootheel Consortium — (Silver City, Deming, Animas, Lordsburg, Cobre, and Reserve)
- Math, Engineering, and Science Achievement (MESA) program
- Northern New Mexico Math and Science Academy (Los Alamos National Laboratory)
- Cisco Regional Training Academy

RETA's curriculum partners:

- Museums of New Mexico
- KNME Public TV
- TechShare
- MCI-WorldCom Foundation—Marco Polo Web Resource
- New Mexico Virtual School

RETA's leadership building/sustainability partnerships:

- New Mexico State University's College of Education
- ENMU, SFCC, WNMU, NMHU, and NNMCC
- Preparing Tomorrow's Teachers Today Grant (PT3) at NMSU
- Collaborative for Excellence in Teacher Preparation (CETP), funded by NSF to support the education of preservice and in-service teachers in math/science/technology
- The New Mexico Coalition of School Administrators

State education technology policy partnerships:

- The New Mexico Technology Literacy Challenge Fund (TLCF)

- New Mexico Council for Technology in Education
- Commission on Higher Education of New Mexico (CHE)
- New Mexico State Department of Education (SDE)

Administrator Workshops

This year RETA worked with two of its partners in a new way in order to meet the program's goal of providing technology professional development to New Mexico administrators. A cohort of RETA instructors, including a number of administrators, developed a series of six workshop modules for administrators. The workshop topics are: School Improvement, Technology Integration, Communications, Data Analysis, Interactive Television and Grant Writing. For a number of years the RETA program and the Santa Fe RRC have both had a strong relationship with the Bernalillo School District, and with district administrators. For this reason, RETA initiated its administrator workshop series in this district. RETA also began providing technology workshops to administrators in the Las Cruces School District this summer and will continue providing these services throughout the 2002-03 academic year.

In addition to these workshop series, RETA has worked with the New Mexico Coalition for School Administrators this year on their Bill and Melinda Gates Foundation grant, which is intended to help develop administrators' leadership ability. RETA took on the role of providing technology resources, expertise, and training for this effort. Not only did RETA supply NMCSA with software and materials for their administrator workshops, but RETA staff also served as instructors for the technology sessions and will continue providing technical support to administrators who participated in the workshops throughout the 2002-03 school year.

Regional Resource Centers

The six RETA Regional Resource Centers, located in geographically diverse areas across the state of New Mexico, provide technology professional development and support to educators in 48 school districts. During the 2001-02 school year, these RRCs offered a total of 189 workshops to in-service and pre-service teachers, administrators, educational support staff, and higher education faculty members. Overall, the 189 technology education workshops given by six RETA RRCs were attended by 1,748 people.

The Regional Resource Centers, which help to develop technical expertise and leadership across the state, are a key component of the RETA model. Funded through the RETA program, the RRCs are encouraged to design professional development opportunities and other services that meet the needs of the various regions they serve. Another important aspect of the RRCs is that they are affiliated with higher education institutions. Not only do these affiliations provide the RRCs with resources such as office space and technology access, but they also provide the RRCs with the opportunity to educate both pre-service teachers and higher education faculty in the use of edu-

cational technology.

In February of 2002, RETA staff, RRC coordinators, and NM State Department of Education staff met to discuss ways in which the RRCs could continue their work after the RETA TICG funding ends. RRC coordinators gave presentations, explaining the work they have been doing in their areas. The NMSDE agreed to begin allocating funding for the RRCs through the state in the 2003 legislative session. In this way, the expertise and leadership developed at the RRCs will be sustained beyond the life of RETA's TICG grant.

Following are descriptions of the work the individual Regional Resource Centers have done over the 2001-02 academic year.

New Mexico State University RRC: The RRC at New Mexico State University (NMSU) in Las Cruces, which serves 8 school districts in the southern and central part of the state, conducted 24 workshops over the 2001-02 school year. These were attended by 356 people, including 66 in-service teachers, 288 pre-service teachers, and 2 administrators. Workshop topics included Marco Polo, Science Resources on the Web, WebQuests, Desktop Publishing, Digital Portfolios, and Digital Imaging. Staff members of this RRC engaged in numerous conference presentations and other dissemination activities. Conferences in which NMSU RRC staff presented include the State Learning Conference, the NM Association of Bilingual Educators, and the National Education Computing Conference.

Santa Fe Community College RRC: The RETA RRC at Santa Fe Community College (SFCC) serves five diverse school districts—Santa Fe, Bernalillo, Taos, Vaughn, and Pecos—in north-central New Mexico. Over the 2001-02 school year, the SFCC RRC offered 52 RRC workshops that were attended by 260 participants. Participants included 218 in-service teachers, 12 educational assistants, 22 administrators, and 10 pre-service teachers. Workshop topics included Marco Polo, Claymation, WebQuest Lesson Development, Excel Schoolhouse Data Analysis, and Active Learning through Technology, a course offered through Southwest Educational Development Laboratory (SEDL). For a number of years this RRC has worked closely with the Bernalillo Public School District to develop and support its School Technology Resource Team initiative. This year the SFCC RRC partnered with Bernalillo and the RETA program to initiate a series of administrator workshops in the district. This RRC partnered with a consortium of districts (Taos, Bernalillo, and Vaughn) on a Technology Literacy Challenge Fund grant, providing workshops to teachers from these three districts.

Western New Mexico University RRC: The WNMU RRC provides professional development and technology training for 6 school districts in Western New Mexico serving a majority Hispanic population. This past year the WRRRC offered 29 workshops attended by 160 people, including 129 in-service teachers, 2 pre-service teachers, 7 administrators, 17 educational assistants, 4 administrative assistants, and 1 higher education faculty member. Workshop topics this year included Marco Polo, Inspiration, Excite, and desktop publishing. The WNMU RRC has continued to partner with the Bootheel Consortium. The two organizations combined their efforts to jointly sponsor workshops. Bootheel provided funds for stipends and trainers, while RETA provided software for participants

and, as often as possible, the coordinator served as a trainer, paid by RETA. A spate of recent mine closings have depressed the economy of this rural region of the state. WNMSU has responded to this local situation, in which many parents are unemployed, by establishing a community volunteer program. The objective of this program is to have parents volunteer to assist teachers in their efforts to integrate technology into their teaching. This year the Western NMSU RRC was able to recruit and train 48 community volunteers.

New Mexico Highlands University RRC: The New Mexico Highlands University (NMHU) RRC serves three school districts in the central region of New Mexico. Over the 2001-02 academic year, this RRC offered 35 workshops which were attended by 236 participants, including 137 in-service teachers, 20 pre-service teachers, 14 administrators, 8 support staff, 30 educational assistants, 8 higher education faculty members, and 15 members of the local community. Workshop topics included Internet/PowerPoint, Web Design for Educators, The One-Computer Classroom, Marco Polo, and Internet Activities for Middle School.

Northern New Mexico Community College RRC: The RRC at Northern New Mexico Community College supports 5 school districts in the northern part of the state, serving a population that is 85% Hispanic and 8% Native American. During the 2001-02 academic year this RRC has offered 12 professional development workshops, attended by 212 people including 163 in-service teachers, 26 pre-service teachers, 4 administrators, 5 support staff, 2 librarians, 2 technology coordinators, and 10 teaching assistants. Workshop topics included Marco Polo, Grant Writing, Kidspiration, PowerPoint, and Microsoft Publisher. This RRC serves as a technology "lending library" by providing technical equipment, including digital cameras, scanners, computers, and LCD projectors, to educators working in the districts served by the center. This year the NNMCC RRC worked with the NM State Department of Education to sponsor a technology expo at the college entitled "Network of Champions," a conference focused on exploring technology solutions for public school technology coordinators.

Eastern New Mexico University RRC: The Eastern New Mexico University RRC serves 21 school districts (many of which are quite small) in the rural and isolated eastern part of the state. In the past year this RRC offered 37 workshops in which 518 people participated, including 471 in-service teachers, 29 pre-service teachers, 12 administrators, 1 support staff member, and 5 higher education faculty members. The ENMU RRC has continued to offer area teachers its Walk the Talk (WTT) program, funded through the NMSDE's Technology Literacy Challenge Fund program, in which teams of regular education teachers, special education teachers, and administrators from individual schools take part in an intensive, year-long technology integration training program. WTT emphasizes helping participants focus their technology integration efforts on improving test scores and meeting national and state technology competency standards.

OBSTACLES AND CHALLENGES

There are multiple obstacles to implementing a statewide program that relies on educators to travel great distances, brings disparate groups of educators together, requires individuals to voluntarily give up six full Saturdays for training, and depends entirely on the technology available in school computer lab settings where generally few funds are available for technical support or maintenance. Given these circumstances, RETA program participants, instructors, and staff report a number of obstacles, described below, over the course of the year. This section covers issues likely to be present in any technology-related professional development effort, and many that may be beyond the control of the RETA program staff

In addition to specific obstacles, the program faces a number of larger challenges. The section focusing on challenges identifies program areas that are not as effective as RETA staff would like, or that require some modification or other alteration to improve participants' experiences and outcomes. This section covers those issues that require additional attention from RETA staff as they plan for and implement the fifth year of programming of RETA under TIGG funding.

The Obstacles

Technology: The failure of technology to function smoothly and without interruption was often mentioned by participants. Specific issues include:

- Lack of Internet access at workshop sites
- Lack of functioning computers at workshop sites
- Lack of sufficient licenses for software during training
- Lack of control over web-filtering software that regularly interferes in activities such as WebQuests or basic web-searching activities.

While many participants simply indicated that sessions would have been better if, for example, the computers did not continually freeze, instructors expressed concern about how these technical difficulties would impact participants' willingness to continue working with technology.

In addition, an issue raised by some participants was lack of access to adequate technology after the RETA workshops. These individuals were concerned by their inability to bring their new technology knowledge into their schools or classrooms because the hardware resources were not available to implement what they had learned. While some of these concerns indicate a high level of fear or discomfort with the technology (such as teachers stating they would be unable to implement what they learned because they had only one Internet-connected computer in the classroom), other teachers were clearly working under conditions that would not allow them adequate access to technology to implement any of the RETA curriculum modules or activities. The majority of these teachers work in early childhood settings where technology is often not considered appro-

priate. However, several also worked in elementary-level classrooms and simply had no access to computers for their students.

Working with individuals with a range of technology skills: Participants and instructors indicated that having teachers with a very broad range of technical skills can be difficult and frustrating for both the instructor and the teachers who feel either left behind by the advanced nature of a workshop, or bored by the slow pace of work. This issue has surfaced several times over the years as the RETA instructors gather to “debrief” during their annual June meeting. Early on the instructors expressed concern about managing both a mix of high and low technically skilled educators while also managing educators who worked with students from the early grades through high school. Managing such a wide array of needs is very difficult, and the RETA program staff made an adjustment during the 2000-01 year, creating workshops that target teachers of different age groups in those locations where there were adequate numbers of participants to fill two workshop groups.

Since then some instructors have been requesting a further split in workshops between novice technology users and more experienced users. They believe that greater homogeneity in terms of teachers’ technical abilities would lead to more effective teaching, more satisfied participants, and more manageable workshops for instructors. However, because of the difficulty of distributing teachers among different groups, especially in rural areas where numbers are limited, RETA staff have been unable to create, fill or staff workshops targeting teachers with different technical skills or working with students of different age groups. This breakdown would require four workshops serving a single area. Because of the geographic distance between locations and the limited number of instructors available to provide workshops in most areas, this is not a realistic option. Instructors are then left to manage on their own with the range of teachers who arrive at the workshops.

This issue will likely be compounded by RETA’s continuing to see its mission as providing higher-end technology instruction to educators who are already somewhat comfortable with technology. The RETA teacher application form has always indicated that only teachers with existing access to technology are encouraged to apply. The rationale for this is the assumption that teachers who have technology (primarily computers) in their classrooms are generally more technologically literate than those without. In addition, teachers who already have access to a computer are the most likely to benefit from technology integration instruction since they can immediately practice in their classroom what they have learned at a RETA workshop. When developing the RETA proposal, staff found, based on extensive work in classrooms, that teachers often had to fight to get a computer in their own room. Those who persisted and finally received one or more computers were generally more committed to using technology in education than those content to have technology-free classrooms. However, now that technology has proliferated in schools across the country over the past five years, this assumption is less valid, and many teachers arrive at RETA workshops with no technology experience despite having a computer in their classroom. Others simply ignore RETA’s recommendation. In addition, the RETA program is currently operating simultane-

ously with the Intel Teach to the Future program, which began its first year in New Mexico during 2001-02. The Intel program provides more basic technology instruction and, like RETA, is available to a wide range of teachers across the state. To avoid duplicate professional development activities and direct competition for teachers in a sparsely populated state, the RETA program has continued to focus on technology activities requiring some existing technical experience. These combined factors suggest that this obstacle for RETA instructors will continue to exist.

Workshop Attrition: Time is always an issue for teachers, and lack of time to participate in workshops continues to affect teachers enrolled in RETA. Over the course of a year, the RETA program regularly loses approximately 20% of workshop participants for a number of reasons, including: family emergencies, personal obligations, general lack of time, other obligations such as school meetings, trips, etc. In addition, teachers who feel the RETA workshops are not providing useful or relevant information often stop attending workshops. While the RETA program has discussed possible alternatives in scheduling to address the attrition rate, the most effective solution, providing workshops during week days, is simply not possible. Most schools or districts are unable to cover the costs of a teacher missing six full teaching days. Further, because the program's instructors are also teachers, they cannot be absent from the classroom for so many days.

Early on, school and district administrators were responsible for recruiting teachers for the RETA workshops; however this arrangement led to a much higher attrition rate as many teachers were required to attend but had no interest in learning about technology integration. As a result the program changed its recruiting method and began targeting teachers directly to ensure that only those with some interest in professional development would attend the workshops. This change helped considerably with the overall attrition rate.

RETA has continued to address the issue of attrition by offering a new series of online workshops to participants with the expectation that these can substitute for one or two in-person workshops. This would allow participants to attend only four in-person sessions and complete the other sessions via telecommunication. In addition, RETA staff is working with local school districts to provide professional development in a more flexible format, such as during professional development days or during a summer institute.

Recruitment: Related to attrition is the ability to recruit teachers who are actively interested in and committed to learning about new approaches to teaching and classroom practice. Getting the word out to schools and teachers is not easy. Often, RETA information does not reach the individuals interested in participating in professional development. New Mexico has no central updated email listing of all school principals, and often printed material sent to a district office does not reach that district's schools. There are strengths and weaknesses across the state in terms of information distribution, and the RETA program needs to find a way of connecting to new teachers other than conventional mail.

The Challenges

Bringing in Administrators: The RETA program began with a focus primarily on teachers. However, early on the RETA staff surveyed teachers, asking what they needed in their schools to implement technology across the curriculum successfully. Teachers said they needed knowledgeable administrators who understood the potential for technology. This laid the groundwork for the RETA project goals that address working with school administrators. However, bringing administrators into the RETA program has proved very difficult and has challenged RETA in terms of its own workshop structures and offerings as well as how its Regional Resource Centers and partnerships with other organizations address this issue. While many RETA workshops (those covering six Saturday sessions) have included school principals, assistant principals, and other administrators, there is rarely more than one administrator in any group. These are often very committed educators whose teachers are involved in the RETA workshops and who have a strong vision about the role that technology can play in a student's education. However, most of the RETA workshop content is not tailored to meet the particular needs of administrators, who are nonetheless invited and encouraged to participate in the workshops.

RETA's Regional Resource Centers (RRCs) have played a significant and increasing role in addressing this lack of focus on administrators. The RRCs have reached out to groups of administrators, providing targeted training to groups from single school districts as well as to administrators from multiple districts. In addition, RETA staff have partnered with the New Mexico Coalition of School Administrators and the Bill and Melinda Gates Foundation on a new initiative within the state that targets school administrators and provides them with management training. In this program, the Gates Leadership and Technology initiative, RETA staff provide technology training and support to approximately 75 principals and superintendents from 12 schools districts. In the coming year they plan to work with over 200 principals and superintendents from a wide range of districts.

While these steps are significant in reaching a much larger audience of school administrators than previously, RETA staff continue to examine ways to extend this reach by examining the experience of administrators to identify the most effective approaches to retaining their participation. Interviews with RRC coordinators and workshop leaders indicate that most administrators who engaged in RETA workshops did so because of a personal interest in the technology rather than for clearly delineated work-related issues. This personal interest, combined with administrators' need to better manage their time and their schools, has contributed to the success of an RRC effort that provides hand-held computing devices to administrators and offers a series of workshops on their use. Administrators find the technology intriguing and see its uses as both personal and professional. RETA staff must continue to expand the options for administrators to become competent users of technology through avenues such as this.

The Regional Resource Centers: The RRCs present both challenges and opportunities to the RETA program. While the original goals of the project were to establish centers that had a significant

level of autonomy and were considered extensions of their home institutions rather than branches of the RETA office, the program recognizes the need to maintain some level of consistency of workshop content offered by these centers in order to ensure some common connections with the larger RETA project. Steps have been taken to address this. For example, RRC coordinators attend RETA-sponsored professional development activities and are brought together to plan and discuss programming jointly.

In addition, the RRC coordinators are being called on by the State Department of Education to provide technical assistance in the preparation of proposals for technology funding in relation to the No Child Left Behind Act. While the project recognizes the need to allow RRCs significant independence, as this is the only way RRCs can be sustained beyond the life of the project, there must be some identifiable connections to the RETA curriculum and approach to instruction and technology integration.

Consistency among Instructors: One concern among RETA staff is the consistency and quality of instruction across all RETA workshops. Past workshop evaluations and formal and informal interviews have revealed occasional mismatched partnerings among the instructor group. RETA staff found that certain instructors who received low ratings from participants when paired with one individual were later rated as highly effective when paired with different partners. RETA staff have attempted to work with instructors to ensure pairing individuals who work well together when possible to avoid this problem.

The Classroom Connection: A constant concern among RETA staff is how RETA workshop information is translated into classroom practice. This concern was described by one RETA staff member as “the classic theory-to-practice question.” Ensuring that teachers leave RETA workshops with adequate knowledge and skills to implement technology-integrated curriculum with students is the foundation of RETA programming, yet how can RETA instructors and staff know what is taking place at the classroom level? One way to address this question is with the data collected through the structured classroom observations. Below are a series of concerns drawn from these observations. These concerns were provided to RETA staff prior to the PD 2002 (the program’s annual Instructor professional development event) where instructors gather for debriefing and professional development.

Concerns, based on classroom observations, regarding implementation of technology include:

- **Internet searching:** Teachers initiated Internet searches with students without providing clear guidelines or parameters regarding search protocol. In addition, no evidence indicated that teachers had completed a practice search prior to giving students their assignment.
- **Reading vs. finding information:** Teachers need to use strategies that encourage students to make full use of the Internet as a valuable information resource by reading through the information they find. Although limits on computer lab time may make it difficult for students to both search and read, teachers must make time in regular class periods for students to read

what they find.

- Presenting material to peers: When students present material they have prepared (such as a PowerPoint presentation) to peers, the presentation should be an opportunity for students to learn to receive and give feedback on work. Teachers must prepare students for these activities by modeling appropriate ways for students to provide feedback to fellow students.
- Saving work: When it comes to activities like saving files to student accounts on the network, it would be valuable for teachers to give all the students written instructions explaining the file-saving procedure. Because students can lose an entire period's worth of work if they save to the wrong place—a huge source of frustration for both students and teachers—file-saving information is crucial.
- Student collaboration: Teachers are often unable to attend to the larger purpose of a lesson in a computer lab because their attention is needed for more mundane technical problems. At the same time many teachers spend a significant amount of time instructing students to sit quietly and not talk with each other. Teachers can exploit students' tendency to talk and share information by assigning computer buddies, pairing less skilled with more independent students. Students should be encouraged to ask a "buddy" for help first before asking the teacher, as this would allow the teacher to attend to more significant content matters.

It is clear that while the RETA program is well received by teachers, and has had a clearly documented positive impact on classroom practice and on student activities with regard to technology use, the program still has multiple challenges to address in order to continue providing high-quality professional development to the New Mexico teaching community.

NEXT STEPS

The evaluation team has worked closely with RETA staff to determine the needs of the project as it begins its fifth and final year under TICG funding. During this final year the following issues will be addressed:

1. *Program sustainability*: aspects of the project's sustainability plan will be examined in terms of their structure and feasibility
2. *Teacher impact*: the impact at the classroom level of RETA workshops will be measured through survey and observation data collection, as well as through interviews with teachers.
3. *Administrator impact*: the impact at the school level of administrator involvement will be measured through interviews and survey data
4. *Student impact*: data collected by state agencies will be examined for those schools and districts where RETA teachers form a critical mass of the teaching population. Student achievement data will be examined, as will other information such as attendance and teacher retention rates.
5. *Policy impact*: the role that RETA plays in the state and local policy arena will be examined through interviews and documentation of RETA participant activity in state-related technology activities, as well as through examination of state and district technology plans over time.
6. *Dissemination*: The evaluation team, in conjunction with RETA staff, will continue to present evaluation findings at professional conferences and will seek publication of evaluation findings in relevant journals as well as other publications.

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APPENDIX A

RETA Participants' Pre-Questionnaire

Fall 2001

Dear RETA Participant/Instructor;

Thank you for filling out this survey. The RETA Program is required by its funder, the US Department of Education, to conduct an evaluation of its activities every year. In order to ensure that RETA is achieving its goals, we need to gather information from RETA participants and instructors. The answers you supply to questions in Part I help us to make sure that the RETA Program is reaching a population of educators that is diverse in age, ethnicity, gender, and teaching experience. Parts II - IV provide us with information about the technology experience of RETA participants and instructors. We ask for your name only so we can match your responses in the pre-survey to those in your post-survey. Your name and your responses will remain confidential.

Part I:

1. Last name: _____
2. First name: _____
3. School District: _____
4. Are you an instructor or participant?
5. Age: _____
6. Gender: ___ Female ___ Male
7. Your ethnicity: ___ African American ___ Asian ___ Hispanic
 ___ Native American ___ Anglo/White ___ Other _____
8. Grade taught: _____
9. Years teaching: _____

Part II

10. Have you participated in RETA workshops in previous years, check all that apply:

1995/96 _____	1998/99 _____
1996/97 _____	1999/00 _____
1997/98 _____	2000/01 _____

11. Do you have a computer at home? Yes No

12. Do you have access to the Internet from home? Yes No

13. Do your students have access to a school computer lab? Yes No

14. If so, does the computer lab have access to the Internet? Yes No

15. Do you have computers in your classroom? Yes No

16. If you have computers in your classroom, how many do you have? _____

17. Do you have access to the Internet in your classroom? Yes No

18. Number of years you have used computers in your classroom(s): _____

19. Please circle the term that best describes how you would now characterize your experience integrating computers into your teaching:

Never Used Before Novice User Intermediate User Advanced User Expert User

20. I use email:

Daily Weekly Monthly 2-3 times/yr. Never

21. I use the World Wide Web:

Daily Weekly Monthly 2-3 times/yr. Never

22. How many times a week do your students use computers at school?

Daily Weekly Monthly 2-3 times/yr. Never

23. Which computer applications have you used with your students?

Word processing Never 2-3 times/yr. Monthly Weekly Daily

Spreadsheets Never 2-3 times/yr. Monthly Weekly Daily

Database Never 2-3 times/yr. Monthly Weekly Daily

Email Never 2-3 times/yr. Monthly Weekly Daily

Internet/WWW Never 2-3 times/yr. Monthly Weekly Daily

Desk-Top Publishing Never 2-3 times/yr. Monthly Weekly Daily

Comp/Web Programming Never 2-3 times/yr. Monthly Weekly Daily

Hypermedia Never 2-3 times/yr. Monthly Weekly Daily

Educational Software Never 2-3 times/yr. Monthly Weekly Daily

(i.e. Zoombinis, MathBlaster, Oregon Trail)

Accelerated Reader or similar programs Never 2-3 times/yr. Monthly Weekly Daily

CD-ROM reference (i.e. encyclopedia) Never 2-3 times/yr. Monthly Weekly Daily

Part III

If you have not used technology (technology can include video, audio, computers, projectors, etc.) in your teaching, please go to Part IV of this questionnaire.

Think of an effective lesson or activity you have done with your students that involved some form of technology.

24. Please briefly describe this lesson/activity.

25. Which of the following best describes how that lesson/activity was structured (Please check one)

Teacher presents material

Student presents material

Teacher integrates technology into question and answer session

Activity or project done on the computer

Students work at computer, desk, and/or library or resource center

Students work on test or other assessment activity

Other _____

26. Which kinds of technology did you use in this lesson/activity? (Check all that apply)

Computer

Printer

Scanner

- TV
- VCR
- Digital Camera
- Video Camera
- Other _____

27. Which applications did you use in this lesson/activity? (Check all that apply)

- Word processing
- Spreadsheets
- Databases
- Email
- Internet/WWW
- Desk-top publishing
- Web or computer programming
- Hypermedia
- Educational software (i.e. Zoombinis, MathBlaster, Oregon Trail)
- Accelerated Reader
- CD-ROM reference (i.e. Encyclopedia)
- Other _____

28. Which of the following best describes your role in the lesson/activity? (Please check one)

- Leader: teacher instructs class with or without student interaction
- Facilitator: teacher guides students as they work independently or in groups
- Observer/monitor: teacher watches students and assists students when approached
- Other _____

29. Which of the following best describes your students' role in the lesson/activity? (Please check one)

Independent work: students work on activities by themselves

Group work: students work in small groups

Whole class activities: students work as a large group

Interacting with teacher: students respond to teacher questions

Listening: students listen to teacher, TV or other media

Other _____

30. Who used technology in this lesson/activity? (Check all that apply)

Teacher

One student

Some students

All students

Guest

Other _____

31. How was technology used in this lesson/activity? (Please check one)

To teach a specific application (i.e. MS Word or Excel) or a computer skill (i.e. keyboarding)

By teacher to present subject matter

By students to present information

As part of a class activity or assignment

By students as a free-choice option or reward

Other _____

Part IV

32. How often do you assist other teachers with:

a. Technical problems involving computer hardware

Never 2-3 times/yr. Monthly Weekly Daily

b. Technical problems involving computer software

Never 2-3 times/yr. Monthly Weekly Daily

c. Designing curriculum that uses computers

Never 2-3 times/yr. Monthly Weekly Daily

d. Brainstorming/discussing issues related to computer use

Never 2-3 times/yr. Monthly Weekly Daily

33. Have you ever trained anyone else in the use of technology?

Yes No

If yes, please check what kind of training you have done, and indicate how many people you trained in each category:

a. Trained (#) teachers in my school

e. Trained (#) administrators in my school

b. Trained (#) teachers in my district

f. Trained (#) administrators in my district

c. Trained (#) teachers outside of my district

g. Trained (#) administrators outside of my district

d. Trained (#) parents

h. Other _____

34. Have you ever attended an education-related professional conference?

Yes No

If yes, which one(s)? _____

35. Have you ever made a presentation at an education-related professional conference?

Yes No

If yes:

Which one(s)? _____

Was your presentation technology-related?

Yes No

36. Have you ever helped your class, grade, school, district or other program apply for educational funding from a private, government or foundation source?

Yes No

If yes, please briefly describe what you applied for: _____

Thank you for completing this questionnaire!

APPENDIX B

RETA Participants' Post-Questionnaire

Spring 2002

Dear RETA Participant/Instructor;

Thank you for filling out this survey. The RETA Program is required by its funder, the US Department of Education, to conduct an evaluation of its activities every year. In order to ensure that RETA is achieving its goals, we need to gather information from RETA participants and instructors. The answers you supply to questions in Part I help us to make sure that the RETA Program is reaching a population of educators that is diverse in age, ethnicity, gender, and teaching experience. Parts II - IV provide us with information about the technology experience of RETA participants and instructors. We ask for your name only so we can match your responses in the pre-survey to those in your post-survey. Your name and your responses will remain confidential.

Part I:

1. Last name: _____
2. First name: _____
3. School District: _____
4. Are you an instructor or participant?
5. Age: _____
6. Gender: __Female __Male
7. Your ethnicity: __African American __Asian __Hispanic __Native
American __Anglo/White Other _____
8. Grade taught: _____
9. Years teaching: _____

Part II

10. Have you participated in RETA workshops in previous years? (check all that apply)

1995/96 _____ 1998/99 _____

1996/97 _____ 1999/00 _____

1997/98 _____ 2000/01 _____

11. Do you have a computer at home? Yes No
12. Do you have access to the Internet from home? Yes No
13. Do your students have access to a school computer lab? Yes No
14. If so, does the computer lab have access to the Internet? Yes No
15. Do you have computers in your classroom? Yes No
16. If you have computers in your classroom, how many do you have? _____
17. Do you have access to the Internet in your classroom? Yes No
18. Number of years you have used computers in your classroom(s): _____
19. Please circle the term that best describes how you would now characterize your experience integrating computers into your teaching:
- | | | | | |
|-------------------|-------------|-------------------|---------------|-------------|
| Never Used Before | Novice User | Intermediate User | Advanced User | Expert User |
|-------------------|-------------|-------------------|---------------|-------------|
20. I use email:
- | | | | | |
|--------------------------------|---------------------------------|----------------------------------|--|--------------------------------|
| <input type="checkbox"/> Daily | <input type="checkbox"/> Weekly | <input type="checkbox"/> Monthly | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Never |
|--------------------------------|---------------------------------|----------------------------------|--|--------------------------------|
21. I use the World Wide Web:
- | | | | | |
|--------------------------------|---------------------------------|----------------------------------|--|--------------------------------|
| <input type="checkbox"/> Daily | <input type="checkbox"/> Weekly | <input type="checkbox"/> Monthly | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Never |
|--------------------------------|---------------------------------|----------------------------------|--|--------------------------------|
22. How many times a week do your students use computers at school?
- | | | | | |
|--------------------------------|---------------------------------|----------------------------------|--|--------------------------------|
| <input type="checkbox"/> Daily | <input type="checkbox"/> Weekly | <input type="checkbox"/> Monthly | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Never |
|--------------------------------|---------------------------------|----------------------------------|--|--------------------------------|
23. Which computer applications have you used with your students?
- | | | | | | |
|--------------------------|--------------------------------|--|----------------------------------|---------------------------------|--------------------------------|
| 24. Word processing | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 25. Spreadsheets | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 26. Databases | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 27. Email | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 28. Internet/WWW | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 29. Desk-Top Publishing | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 30. Comp/Web Programming | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 31. Hypermedia | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |
| 32. Educational Software | <input type="checkbox"/> Never | <input type="checkbox"/> 2-3 times/yr. | <input type="checkbox"/> Monthly | <input type="checkbox"/> Weekly | <input type="checkbox"/> Daily |

(i.e. Zoombinis, MathBlaster, Oregon Trail)

33. Accelerated Reader or similar programs Never 2-3 times/yr. Monthly Weekly Daily

similar programs

34. CD-ROM reference (i.e. encyclopedia) Never 2-3 times/yr. Monthly Weekly Daily

(i.e. encyclopedia)

Part III

If you have not used technology (technology can include video, audio, computers, projectors, etc.) in your teaching, please go to Part IV of this questionnaire.

Think of an effective lesson or activity you have done with your students that involved some form of technology.

35. Please briefly describe this lesson/activity.

36. Which of the following best describes how that lesson/activity was structured (Please check one)

Teacher presents material

Student presents material

Teacher integrates technology into question and answer session

Activity or project done on the computer

Students work at computer, desk, and/or library or resource center

Students work on test or other assessment activity

Other _____

37. Which kinds of technology did you use in this lesson/activity? (Check all that apply)

Computer

Printer

Scanner

TV

VCR

Digital Camera

Video Camera

Other _____

38. Which applications did you use in this lesson/activity? (Check all that apply)

Word processing

Spreadsheets

Databases

Email

Internet/WWW

Desk-top publishing

Web or computer programming

Hypermedia

Educational software (i.e. Zoombinis, MathBlaster, Oregon Trail)

Accelerated Reader

CD-ROM reference (i.e. Encyclopedia)

Other _____

39. Which of the following best describes your role in the lesson/activity? (Please check one)

Leader: teacher instructs class with or without student interaction

Facilitator: teacher guides students as they work independently or in groups

Observer/monitor: teacher watches students and assists students when approached

Other _____

40. Which of the following best describes your students' role in the lesson/activity? (Please check one)

Independent work: students work on activities by themselves

Group work: students work in small groups

Whole class activities: students work as a large group

Interacting with teacher: students respond to teacher questions

Listening: students listen to teacher, TV or other media

Other _____

41. Who used technology in this lesson/activity? (Check all that apply)

Teacher

One student

Some students

All students

Guest

Other _____

42. How was technology used in this lesson/activity? (Please check one)

To teach a specific application (i.e. MS Word or Excel) or a computer skill (i.e. keyboarding)

By teacher to present subject matter

By students to present information

As part of a class activity or assignment

By students as a free-choice option or reward

Other _____

Part IV RETA Workshop Content Evaluation

On a scale of 1 to 5 (1 being least useful and 5 being most useful), please indicate how useful each of the RETA workshops you attended was to you. ("NA" indicates that you did not participate in a workshop on this subject. "Usefulness" indicates that the workshop helped you personally as well as in your classroom.)

Workshop Topic (1 least useful/5 most useful) Check if you used part or all of module in your teaching

43. Desktop Publishing:

a) A Midsummer Night's Scream	NA	1	2	3	4	5	0
b) History Hound	NA	1	2	3	4	5	0

c) Sell Your Hometown	NA	1	2	3	4	5	0
d) Our 50 States	NA	1	2	3	4	5	0
44. Electronic Communications:							
a) EGroups	NA	1	2	3	4	5	0
b) The Lost Treasure	NA	1	2	3	4	5	0
45. Integrated Packages:							
a) Putting it all Together	NA	1	2	3	4	5	0
b) Xeriscaping	NA	1	2	3	4	5	0
c) Identity	NA	1	2	3	4	5	0
d) Change	NA	1	2	3	4	5	0
e) Character Education	NA	1	2	3	4	5	0
f) Online Collaborative Projects	NA	1	2	3	4	5	0
46. Media Literacy:							
a) Media Investigations	NA	1	2	3	4	5	0
b) Heroes	NA	1	2	3	4	5	0
c) Advantageous Advertising	NA	1	2	3	4	5	0
47. Multimedia:							
a) Hollywood, New Mexico	NA	1	2	3	4	5	0
b) Pet Store Primary Grades	NA	1	2	3	4	5	0
c) Digital Portfolios	NA	1	2	3	4	5	0
48. Web Publishing:							
a) WebQuests	NA	1	2	3	4	5	0
b) Web 3D	NA	1	2	3	4	5	0
49. Initial Workshops and Make-up Sessions:							
a) You Are What You Eat	NA	1	2	3	4	5	0
b) Digital Quilting Bee	NA	1	2	3	4	5	0

- c) Online Make-up Session NA 1 2 3 4 5 0
- d) Assessment Alternatives NA 1 2 3 4 5 0

50. Tech Essentials:

- a) Site Lists NA 1 2 3 4 5 0
- b) Technology Basics NA 1 2 3 4 5 0
- c) Ice Breakers NA 1 2 3 4 5 0

51. Online Learning Environments

- a) El Camino Real NA 1 2 3 4 5 0
- b) The Long Walk NA 1 2 3 4 5 0
- c) Route 66 NA 1 2 3 4 5 0

52. Can you please describe how you used these curriculum modules in your classroom? (Alternate question from last year's survey: What things did you do in your classroom as a result of what you learned during the RETA workshops?)

Part V

53. How often do you assist other teachers with:

- a) Technical problems involving computer hardware
 Daily Weekly Monthly Less than once a month Never
- b) Technical problems involving computer software
 Daily Weekly Monthly Less than once a month Never
- c) Designing curriculum that uses computers
 Daily Weekly Monthly Less than once a month Never
- d) Brainstorming/discussing issues related to computer use
 Daily Weekly Monthly Less than once a month Never

54. Have you ever trained anyone else in the use of technology?

Yes No

If yes, please check what kind of training you have done, and indicate how many people you trained in each category:

- a) ___ Trained ___(##) teachers in my school school
 b)___ Trained ___(##) teachers in my district district
 c)___ Trained ___(##) teachers outside of my district district
 e) ___ Trained ___(##) administrators in my school school
 f) ___ Trained ___(##) administrators in my district district
 g). ___ Trained ___(##) administrators outside of my district district
 d) ___ Trained ___ (#) parents h) ___ Other _____

55. Have you ever attended an education-related professional conference?

___ Yes ___ No

56. If yes, which one(s)? _____

57. Have you ever made a presentation at an education-related professional conference?

___ Yes ___ No

If yes, which one?

Was your presentation technology-related?

___ Yes ___ No

58. Have you ever helped your class, grade, school, district or other program apply for educational funding from a private, government or foundation source?

___ Yes ___ No

If yes, please briefly describe what you applied for: _____

59. What aspects of the RETA workshops were most useful to you?

60. What changes in the RETA workshops or project would you like to see?

61. What highlights or successes can you share with us about using RETA approaches and activities?

Thank you for completing this questionnaire!

APPENDIX C*RETA: Classroom Observation Protocol*

Date: _____

Time of day: _____

Observer: _____

Teacher Name: _____

School/Location: _____ e.g., Monroe Middle School/Hatch, NM

Course Name/Grade _____ Ability level _____

(i.e. 6th grade science class; 2nd grade class) (i.e. special ed., gifted, AP, mixed)

Other characteristics of class _____

(i.e. bilingual, ESL)

Total number of students: _____ Ask teacher about ethnicity of students in class.

Females _____ Males _____ African American _____

Brief description of students:

Asian _____

Caucasian _____

Latino _____

Native American _____

Other _____

Sketch of Classroom (indicate location of students, teacher, technology and other resources):

Number of computers in room _____

Description of computers (i.e. format, age, condition) _____

List all other kinds of technological devices in room (i.e. printers, scanners, TV monitors, VCRs, calculators, etc.) _____

Descriptive 1 minute Snapshots taken at 5 Minute Intervals

Time Start	Code	Other Observations
	Subject:	
	Class Activity:	
	Technology used:	
	Applications used:	
	Teacher Role:	
	Student Role:	
	Who is using technology:	
	How technology is used:	
	Subject:	
	Class Activity:	
	Technology used:	
	Applications used:	
	Teacher Role:	
	Student Role:	
	Who is using technology:	
	How technology is used:	
	Subject:	
	Class Activity:	
	Technology used:	
	Applications used:	
	Teacher Role:	
	Student Role:	
	Who is using technology:	
	How technology is used:	

APPENDIX D

Classroom Observation Coding Guide

Class Activity

1. Lecture: teacher talking or presenting material (could be video, audio, computer program) and students are listening
2. Presentation: students present work
3. Question and answer: teacher is leader but there is interaction with students
4. Lab or activity: students work actively on a project
5. Desk work: i.e. reading silently, worksheets
6. Test: students work on an assessment activity
7. Other

Technology Used

1. Computer
2. Printer
3. Scanner
4. TV
5. VCR
6. Digital Camera
7. Video Camera
8. Other
9. NA

Applications Used

1. Word processor
2. Spreadsheet
3. Database
4. Email

5. Internet/WWW
6. Desk-top publishing
7. Computer/web programming
8. Hypermedia
9. Educational software (i.e. Zoombinis, MathBlaster, Oregon Trail)
10. Accelerated Reader or similar program
11. CD-ROM reference
12. Other
13. NA

Teacher Role

1. Leader: teacher directs class with or without student interaction/participation
2. Facilitator: teacher assists and engages students as they work independently or in groups
3. Observer/monitor: teacher watches students but does not engage in content-related discussion unless approached by student
4. Other

Student Role

1. Independent work: students work on activities by themselves (i.e. reading, taking a test)
2. Group work: Students work in groups doing a collaborative activity
3. Whole class activities: students work as a large group i.e. preparing for a class play
4. Interacting with teacher: i.e. students respond to teacher questions
5. Passive listening: students listen to teacher, TV or other media
6. Other

Who Is Using Technology

1. Teacher
2. One student
3. Some students (includes group of students working on one computer, even if only one student is actually touching the machine)

4. All Students
5. Teacher and students
6. Guest
7. Other
8. NA

How Is Technology Being Used

1. To teach technology skills (i.e. teaching a specific application or how to use computer)
2. By teacher to present subject matter
3. By students to present information
4. As part of a lab, activity or assignment (i.e. using a spread sheet to plot data for science, or to locating information on the web for a research project)
5. By students as a free-choice option or reward, unrelated to academic project (i.e. to play a game or to surf the web for fun)
6. Other

APPENDIX E

RETA Project

RETA Participant Case Study Interview

The following Interview Guide is to be used with RETA participants whose classrooms have been observed during the 2001 - 2002 school year by RETA evaluators and project staff. The goal of this interview guide is to capture whether or not participation in RETA has effected the use of technology in the classroom setting, and if so, how. We are also looking for specific examples of what students are doing as a result of their teachers' involvement in RETA.

To be completed by interviewer before beginning interview:

Name of interviewer _____ Date of Interview: _____

Name of Teacher: _____

School: _____

Grade level(s) taught: _____

1. How long have you been teaching?
2. How long have you been in the RETA program?
3. Before joining RETA how/did you integrate technology in your classroom?
4. Think of a typical school day now. How would you say this day differs from a typical day prior to your RETA participation?

Probe: (look for: collaborative opportunities, occasions for independent and group work, student-directed discussions and presentations, open-ended questioning, authentic tasks)

Describe which technologies you use most often?

Which technologies do you find most valuable?

How do you incorporate these?

Which do you find least valuable?

5. What has your participation in RETA meant to you personally and professionally?

Probe: (Do you have new roles in your own school community such as conducting workshops, or providing technical help?)

6. Tell us about a significant success in your teaching that you think may be related to RETA?

What are the ways that you've seen your students learn best? How does technology play into this?

7. Tell us about a significant challenge in your teaching that you think may be related to RETA?

8. If you were the evaluator, where would you look to find evidence of RETA's impact on students?

9. Anything else we should know?

Prepared by the Center for Children and Technology

APPENDIX F

RETA Project

Technology Leader Interview

1. How long have you been involved with the RETA program?
2. What was your position in your school/district before you became involved with RETA?
3. How was technology handled in your school/district at that time? (what kinds of positions were there, how many people)
4. What new responsibilities in your school or district have you taken on since becoming involved with RETA?
5. Did you move into an existing position(s) in your school or district, or was this position(s) created by or for you?
6. What have you done to affect the way technology is handled in your school/district?
7. What did you learn from RETA that influences the way you deal with technology integration and instruction in your school/district?
8. What role have you played in your school/district regarding the following:
 - Technology purchasing
 - Technology planning
 - Obtaining technology funds
 - Professional development in technology
9. Have you been involved in any educational technology programs, events, committees, etc. outside of your school/district? (i.e. conferences, legislative presentations, state education panels)
10. Are you doing anything now to expand technology leadership in your school/district/region? (through mentoring other teachers or professional development activities, etc.)

APPENDIX G

RETA Project

Policy Maker Interview

1. Please briefly describe your position.
2. In what way are you involved in education policy in the state of New Mexico?
3. How did you first learn about RETA?
4. Can you briefly describe the state of educational technology in New Mexico before RETA existed?
5. How would you describe the impact of RETA on NM state education practice or policy regarding:
 - Professional development
 - Technology funding
 - Technology integration and pedagogy
 - Regional capacity building in technology
 - Technology leadership development
 - Overall state vision for technology integration
6. Can you give some specific examples that demonstrate RETA's influence on educational technology policy in New Mexico?
7. Has RETA had any influence on education policy decisions you have made?
If yes, in what way?
8. What questions should we ask other policy makers to help us understand the impact that RETA has had on the state?

APPENDIX H

TLCF Grant Application and District Technology Plan Review

1. How many of the applications/plans mention RETA or an RRC in any way (note whether it's RETA or an RRC, and if an RRC, which one)?
2. How many of the applications/plans that were accepted mention RETA or an RRC in any way (note whether it's RETA or an RRC, and if an RRC, which one)?
3. Do any of the grant/tech plan writers have a connection to RETA? If so, what is the connection (RETA participant or instructor, RRC workshop participant, instructor or staff, Walk the Talk or Hand in Hand participant or instructor)?
4. What are the characteristics of the school or district from which the grant application/tech plan comes (rural/suburban/urban, percentage free/reduced price lunch, ethnicity of students, percentage second language learners)?
5. Does the program described in the grant/tech plan have a similarity to the RETA model:
 - a) teachers teaching teachers, building technology leadership in the community, teaching participants to train others
 - b) focus on integrating technology into curriculum rather than technology training
 - c) supplying teacher-participants with materials, equipment, stipends and/or follow-up experiences
6. Does the grant application/tech plan mention leveraging RETA or RRC services in some way?
7. Does the grant application/tech plan mention leveraging RETA trained teachers?