

Real Teachers Making Real Changes: The RETA Model for Professional Development

Wendy Martin

Naomi Hupert

Noga Admon

The Center for Children and Technology/Education Development Center

Carmen Gonzales

New Mexico State University

INTRODUCTION

The Regional Educational Technology Assistance (RETA) program offers professional development opportunities to educators across the state of New Mexico in the integration of technology into academic content. The program 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 (RRCs) throughout the state. The program works to reach teachers of students who are often underserved by more traditional professional development efforts. This paper address findings from the year 4 evaluation of the RETA program. A complete copy of the evaluation report can be found at:

http://www2.edc.org/cct/publications_report_summary.asp?numPubId=102

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.

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

Theoretical Framework

¹ Figures from the 2000 US Census.

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. With a clear focus on program goals and the provision of extensive professional development opportunities, training must provide real-world experiences for teachers and administrators who have direct impact on the instruction of students. It is the educators who understand the medium who will use its currency and authenticity to their advantage (Adams & Burns, 1999; McKenzie, 1999).

Successful reorientation of teachers from direct instruction to constructivist teaching methods that incorporate technology must alter teachers' epistemologies. In a study to understand what teachers believe about the nature of knowledge and learning and how these beliefs affect their curriculum implementation and instructional approaches, Howard, McGee, Schwartz, and Purcell (2000) found that "constructivist approaches to training teachers may actually produce epistemological changes in line with constructivist philosophies" (p. 459). Professional development, then, must address the beliefs held by educators and the methods in which they incorporate those beliefs into their teaching as well as deliver effective, new methods of integrating technology and curricula. Becker and Reil (2000) found that professionally engaged teachers have a more constructivist approach to teaching than teachers who do not engage in professional development opportunities.

RETA's model of professional development addresses the standards set forth by the National Staff Development Council (NSDC, 2000). These guidelines steer professional development planners into critical analysis of intended outcomes and define a clear infrastructure for achieving those outcomes. The structure of RETA workshops has come to incorporate several of the NSDC's prominent strategies. RETA's tenets are primarily aligned with the beliefs that

- 1) Teachers need adequate time for the phases of the change process: initiation, implementation, and institutionalization
- 2) Teachers and staff members learn and apply collaborative skills to make shared decisions, solve problems, and work collegially
- 3) It is important to address diversity by providing awareness and training related to the knowledge, skills, and behaviors needed to ensure an equitable and quality education for all students
- 4) Educators need to create challenging, developmentally appropriate curricula that engage students in integrative ways of thinking and learning (NSDC, 2000).

A significant component in the RETA program is using teachers to train other teachers. The literature suggests that sustained, lasting change in performance is most likely to occur when teachers participate in a support network with partners (Norton & Gonzales, 1998; McKenzie, 1999). Building communities of learners and allowing teachers to network and share ideas with their peers provides the opportunity for opening the isolated classroom and bringing in new resources to support new models of teaching (Reil & Fulton, 1998). Since teacher/instructors understand classroom culture and the demands of teaching, their guidance is often more relevant and credible to other teachers. Hence, they use their “sophisticated epistemologies” to influence the reorientation of teachers seeking ways to alter their teaching strategies (Howard, et al., 2000). Our data show that teacher/participants in RETA professional development training sessions are veteran teachers seeking to enlighten themselves. These teachers are consistent with Stage 3 of Glatthorn’s (1996) stages of career development — Experimentation or Reassessment — and they are prime candidates for reorienting their teaching methods to include new pedagogical perspectives. In addition, because teachers participating in the workshops can identify with their instructors as peers rather than technical experts, they are able to see how they themselves could assume technology leadership roles in their own school communities.

Given the challenges of implementing technology within established classroom traditions, the RETA project looked for the most effective way to provide professional development along with ongoing support. Weekend workshops offered in different areas of the state seemed the best way to provide access to technology for in-service teachers. These workshops were designed to provide opportunities for teachers to:

- 1) Experience excellent models of technology integration
- 2) Think systematically about the translation of those models into classrooms in their districts.
- 3) Begin to think of themselves not only as learners but possible technology instructors as well.

METHODS

The evaluation of the RETA program was conducted by an external evaluator, who documented in various ways the impact of RETA on teachers’ classroom practices and their professional behaviors. The evaluators employed both qualitative and quantitative methods to gather data during the 2001–2002 school year, including:

Pre- and Post-Surveys: Surveys were administered, via the web, to teacher participants and instructors during the first RETA workshop and then at the final workshop, toward the end of the school year. The instruments collected demographic data as well as information about teachers’ computer use, classroom practices, and attitudes towards technology. The evaluators matched pre/post-survey responses for 419 individuals (representing a 70% response rate). This enabled them to perform statistical tests for matched pairs. The data were analyzed using two nonparametric matched-pairs methods – the Wilcoxon Signed Ranks test and the McNemar test. The evaluators 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 were observed implementing technology activities in their classrooms 3 times over the course of the year. The teachers included both new and repeat RETA participants. Observations followed a structured protocol adapted from the Apple Classroom of Tomorrow (ACOT) and the Milken Professional Competency Continuum (PCC) survey. 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 10 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.

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.

Policy Leader Interviews: Several individuals, including the State Superintendent of NM, 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.

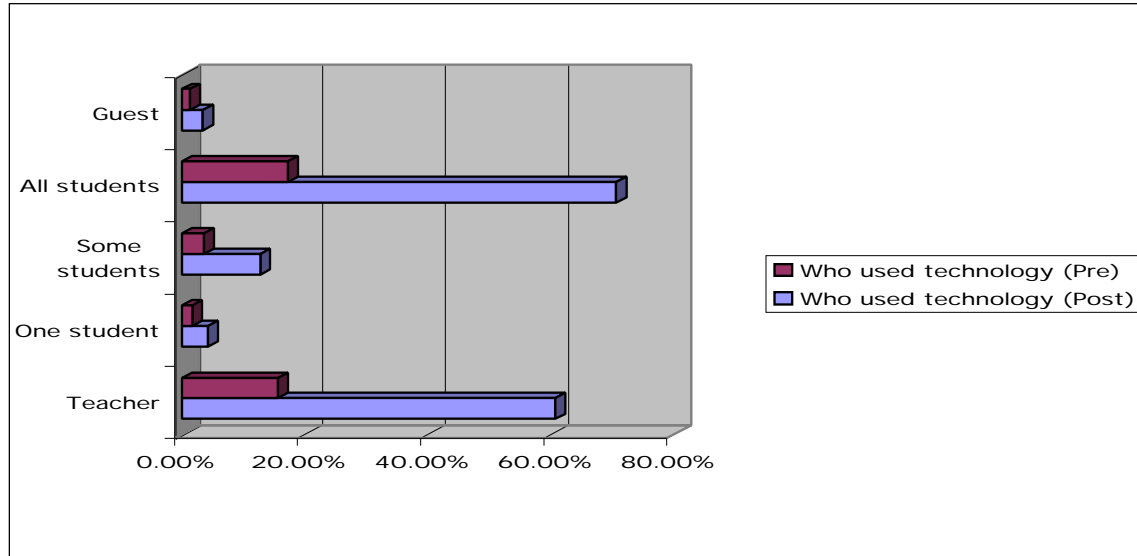
IMPACT ON TEACHING PRACTICE

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 1).

Figure 1. 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 2), and show significant increases in the number of teachers using a variety of software applications with their students (see Figure 3).

Figure 2. Percent of RETA teachers who use a technology tool as measured by pre-and post-survey

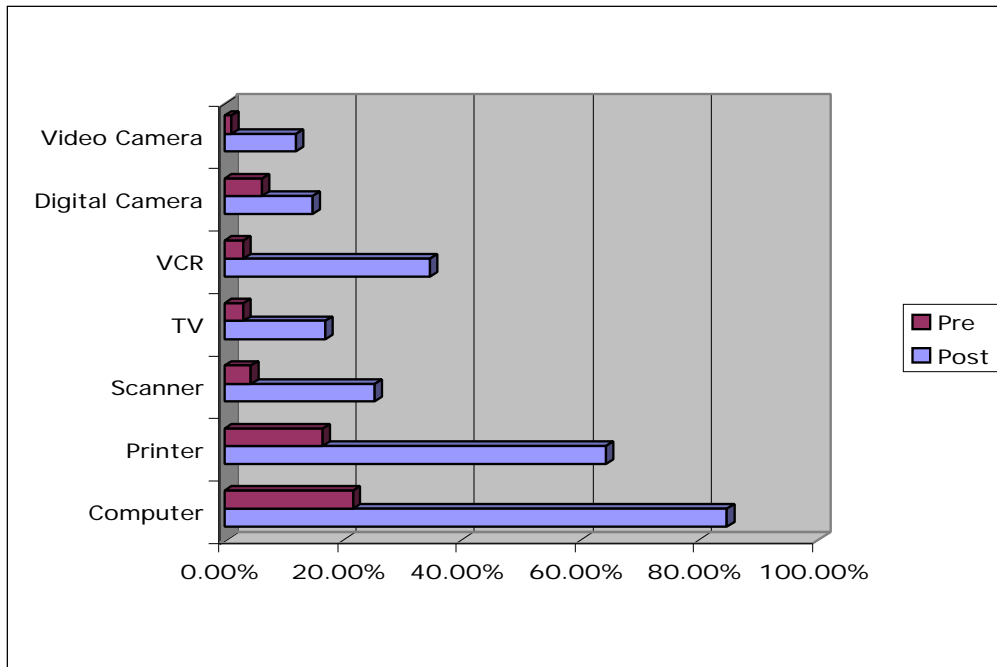
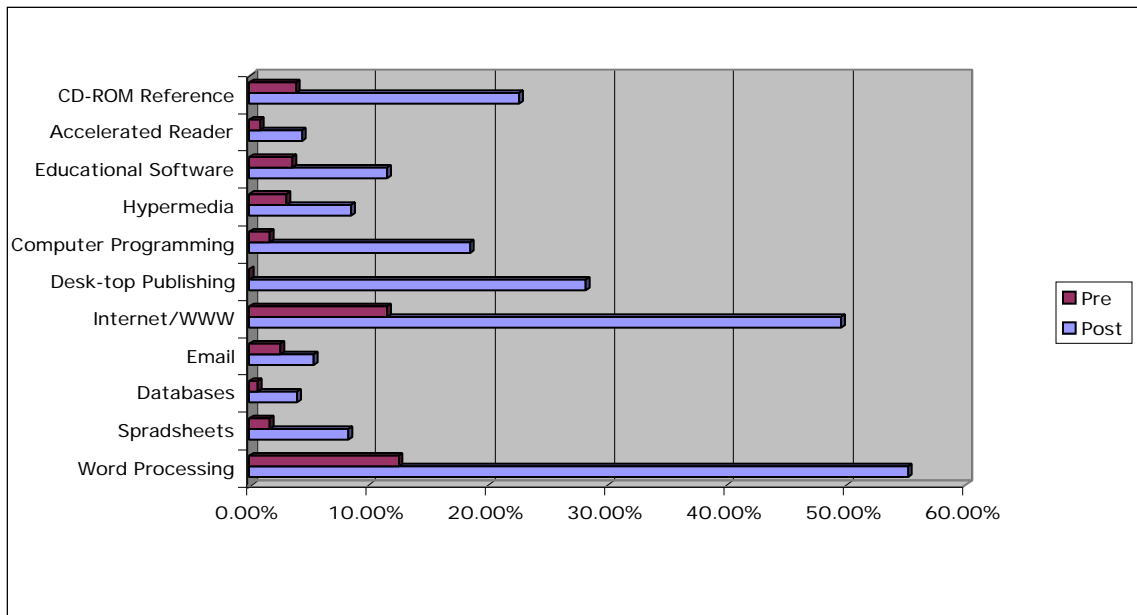


Figure 3: Percent of RETA teachers who use a software package as measured by pre -and post –survey



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 4 & 5), and increased their participation in discussions about curriculum design and technology issues with colleagues (Figures 6 &7).

Figure 4. RETA teachers address hardware problems for other teachers

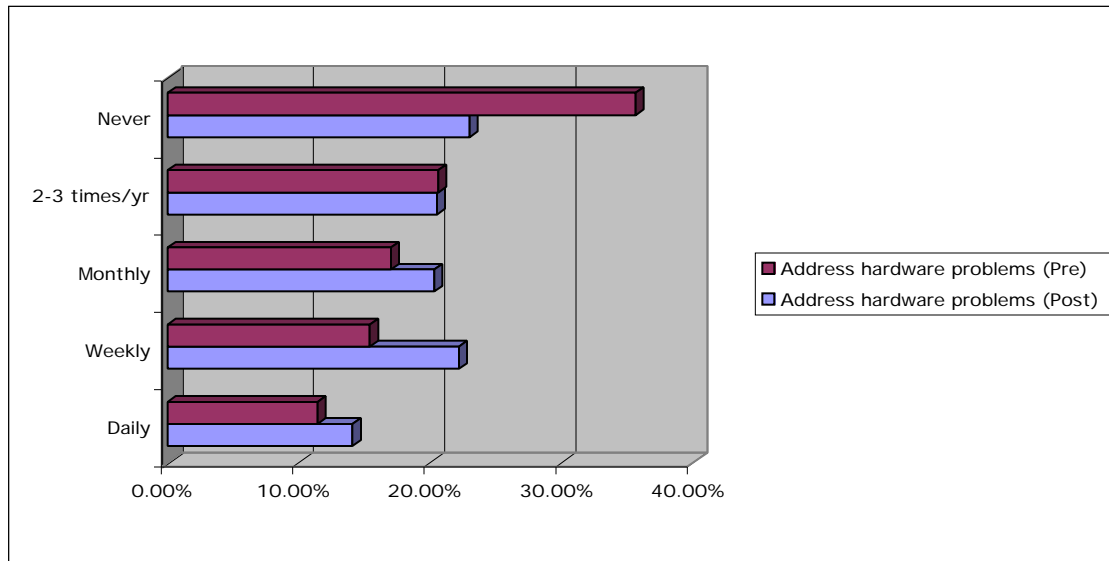


Figure 5. RETA teachers assisting colleagues with software problems

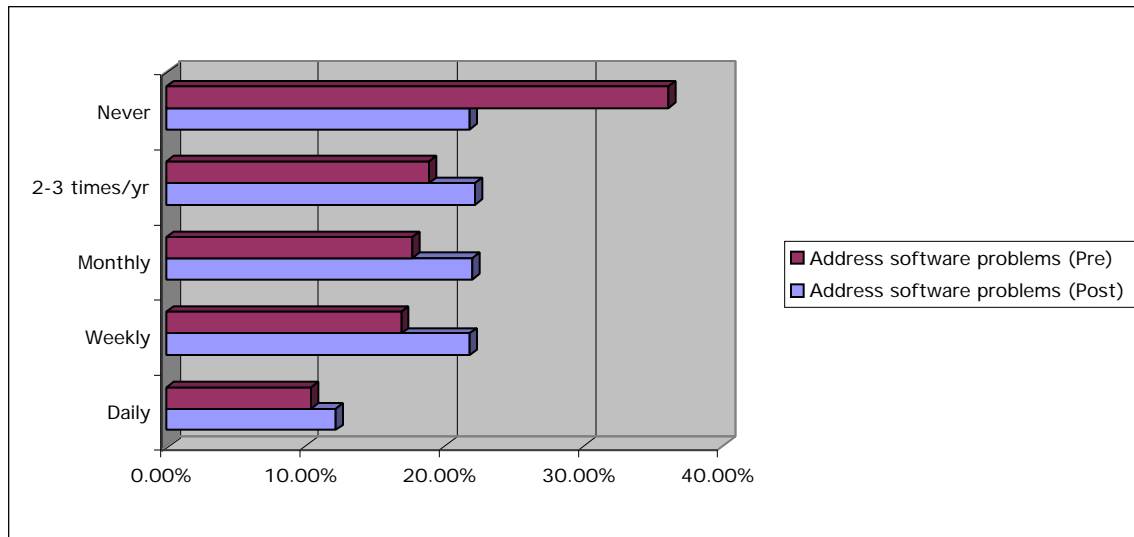


Figure 6: RETA teachers discussing curriculum design and technology with colleagues

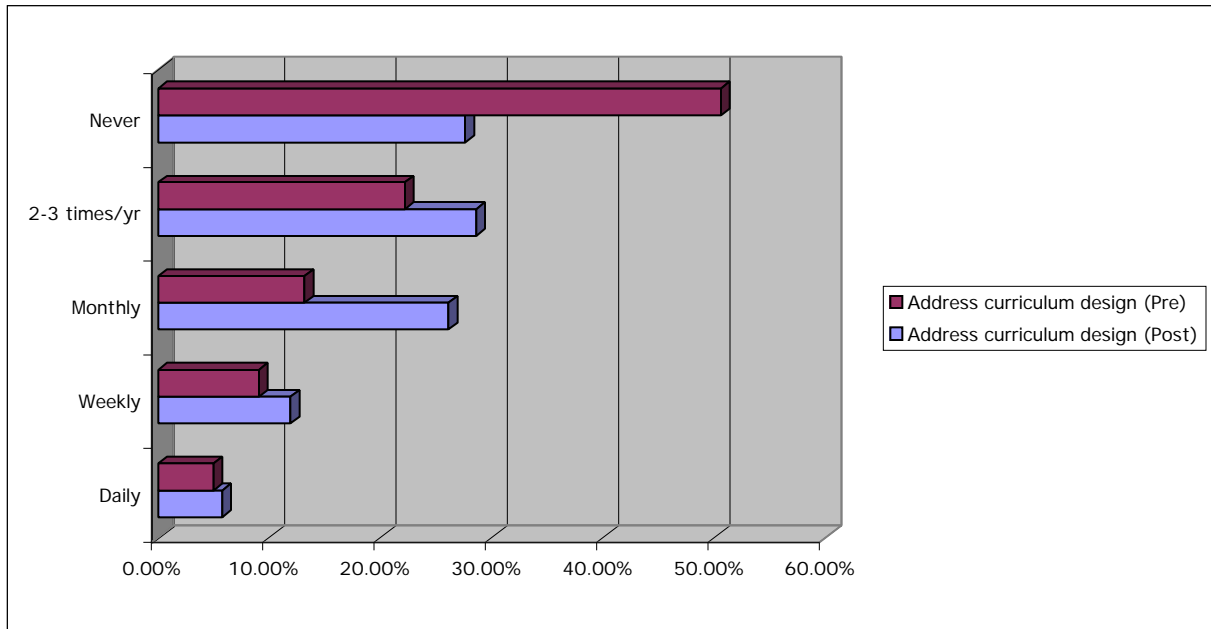
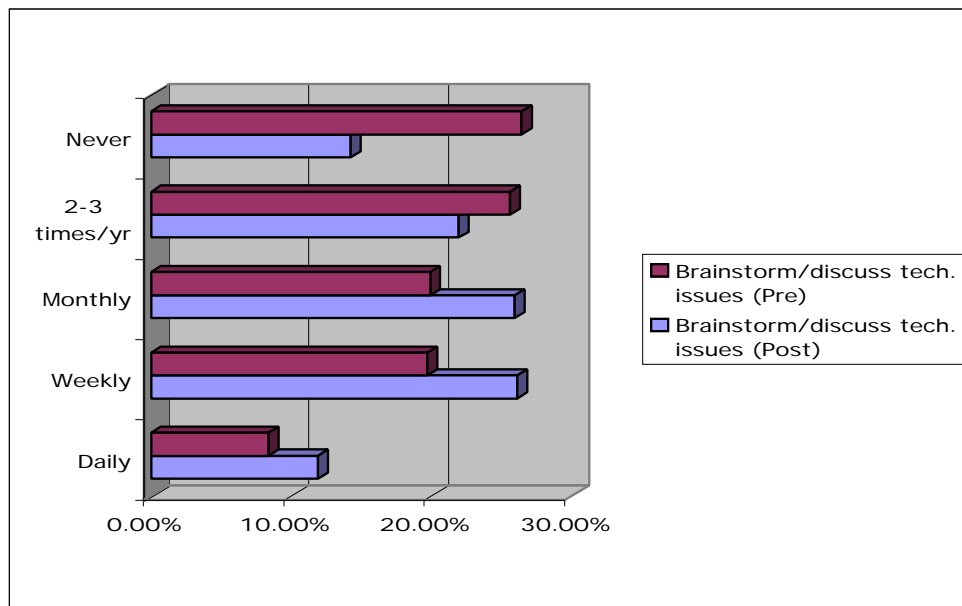


Figure 7: RETA teachers brainstorming/discussing issues relating to technology with others



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 accessible 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.

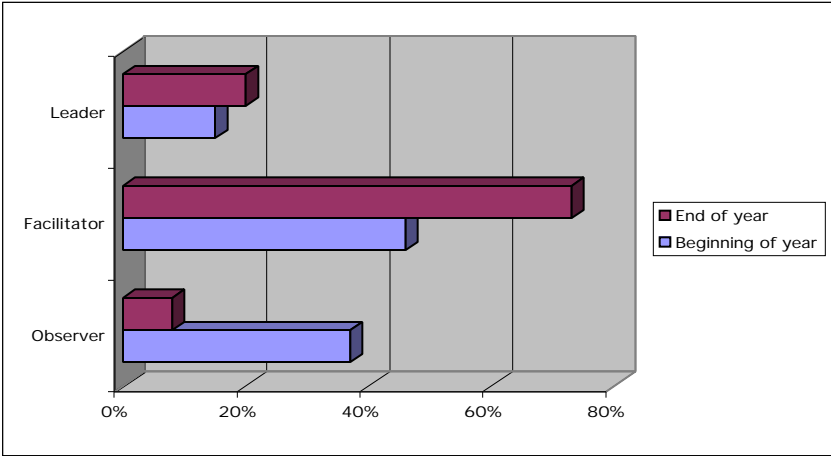
STRUCTURED OBSERVATIONS

One of the goals of the year 4 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 8)

Figure 8: 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 9). The change in the way the observed lessons were structured was even more dramatic for teachers who were new RETA participants (see Figure 10).

Figure 9: Change in lesson format over year for all teachers observed

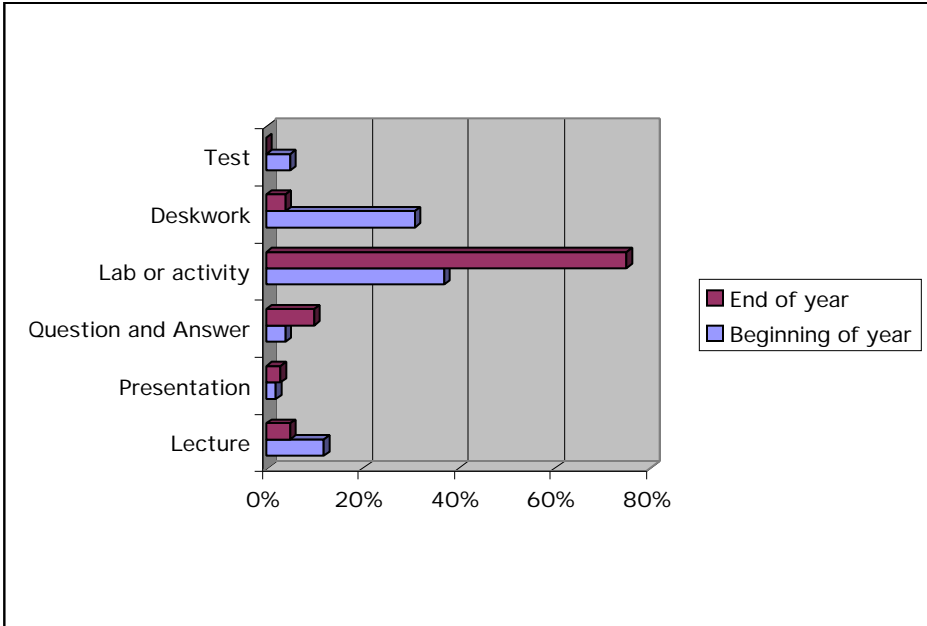
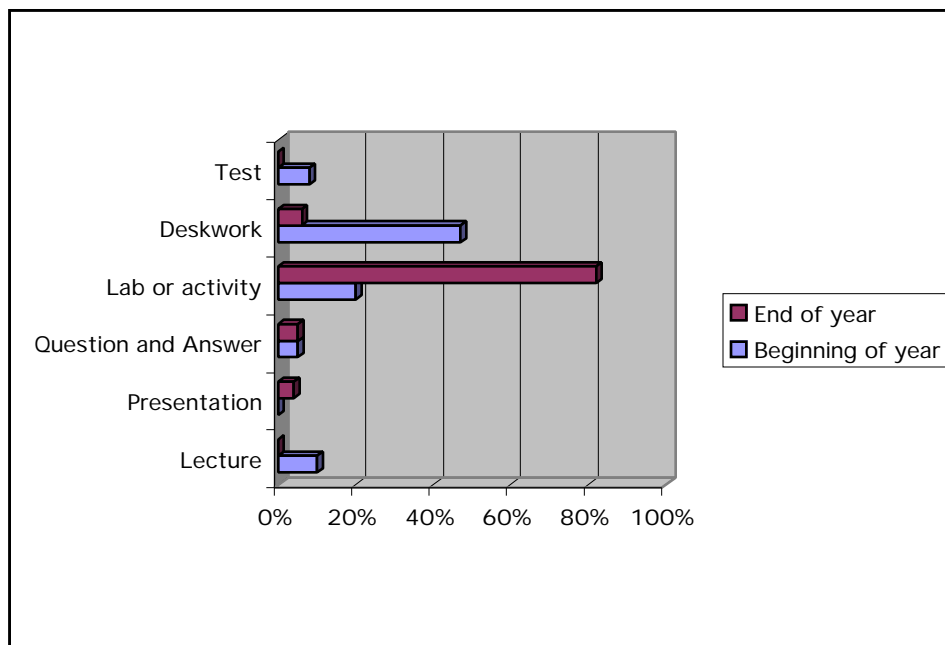


Figure 10: Change in lesson format over year for new RETA participants



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 11). 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 12). 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 11: Change in who used technology in the observed lesson for all teachers observed

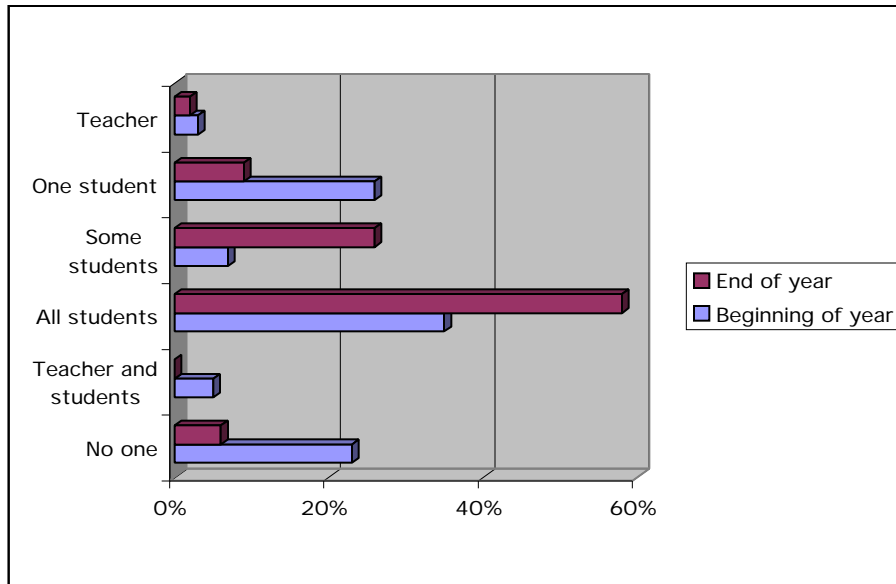
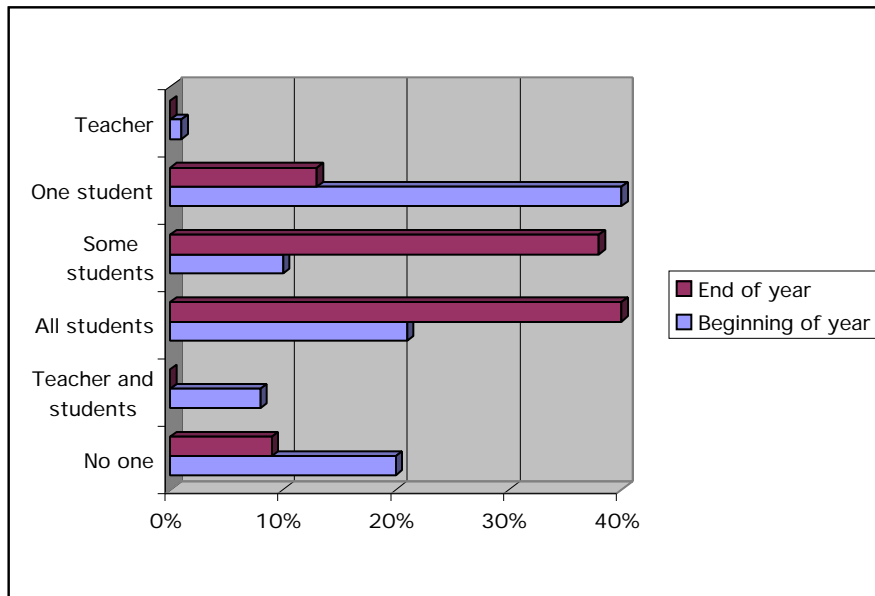


Figure 12: Change in who used technology in lesson for teachers who were new to RETA



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 teaches

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.

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) that the RETA program has established around the state.

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. 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 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/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
- Foundation/nonprofit grants

OBSTACLES

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

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 appropriate. 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.

Workshop Attrition: Time is always an issue for teachers, and lack of time to participate in work-shops 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.

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 the needs of 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 consider 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.

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.

CONCLUSION

The RETA program has made a significant impact on New Mexico's educational technology capacity over the past four years. Not only has it trained thousands of teachers, but it has also created a network of technologically knowledgeable educational leaders at the school, district and state level who can continue to have an influence on the educational technology practices and policies of New Mexico long after the funding for the program has ended. RETA is successful not because of the high level of technological skill of its instructors but because of the support and respect the program offers both its instructors and participants, because teachers themselves are responsible for designing the lessons used in the workshops, and because instructors are able to tailor the workshops to meet the needs of participants. As more and more states and school districts struggle to prepare their students and teachers to become technologically literate, it is essential for educators to be made aware of successful models for professional development in technology. Programs like RETA can serve as valuable additions to this growing body of knowledge.

References

- Adams, S., & Burns, M. (1999). *Connecting student learning and technology*. Southwest Educational Development Laboratory. Austin, TX.
- Becker, H., & Reil, M. (2000). *Teacher professional engagement and constructivist-compatible computer use*. Center for Research on Information Technology and Organizations. University of California, Irvine, and University of Minnesota.
- Boethel, M., & Dimock, K. (1999). *Constructing with technology: A review of the literature*. Southwest Educational Development Laboratory. Austin, TX.
- Glatthorn, A. (1996). *The teacher's portfolio: Fostering and documenting professional development*. Rockport, MA. Pro>Active Publications.
- Howard, B., McGee, S., Schwartz, N., & Purcell, S. (2000). The experience of constructivism: Transforming teacher epistemology. *Journal of Research on Computing in Education*, 32 (4) 455–465.
- Kent, T., & McNergney, R. (1999). *Will technology really change education?* Thousand Oaks, CA.: Corwin Press, Inc.
- McCannon, M., & Crews, T. (2000). Assessing the technology training needs of elementary school teachers. *Journal of Technology and Teacher Education*, 8 (2) 111–121.
- McKenzie, J. (1999). *How teachers learn technology best*. Bellingham, WA.: FNO Press National Staff Development Council. (2000). <http://www.nsd.org/educatorindex.htm>
- Norton, P., & Gonzales, C. (1998). Regional educational technology assistance—Phase II: Evaluating a model for statewide professional development. *Journal of Research on Computing in Education*, 31(1) 25–48.
- Reil, M., & Fulton, K. (1998). *Technology in the classroom: Tools for doing things differently or doing different things*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA, April 1998.