The New Mexico Broadband Program

Digital Literacy Strategic Plan

Version 4.6, December 8, 2014

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Executive Summary

The New Mexico Digital Literacy Training Strategic Plan was developed as part of the New Mexico Broadband Program. The plan is intended to help New Mexico chart a path forward for digital literacy training in the state. The need for this strategic plan reflects the increased importance of digital skills and computer capabilities for participation in all aspects of the civic, economic, professional, and community life. The necessity of digital capacity in all citizens is attested to by the international efforts currently underway to provide all Europeans with the skills needed to enter the digital world and participate in the digital economy. New Mexico will need to embark on a similar training effort and this strategic plan provides guidance for that effort.

This strategic plan is based on a wide range of resources and methodologies. The plan considers information from national and international resources as well as from digital literacy training projects in other states. It reviews findings from New Mexico Broadband Program surveys on broadband access and digital skills, and those assessing access and skill needs specific to education, health, and economic development. This strategic plan unites this information with findings from the New Mexico Broadband Regional Pilot Project, in which field work with New Mexico communities helped identify resources and construct local solutions. These resources, together with input from state and community leaders and members, inform the recommendations made in the New Mexico Digital Literacy Training Strategic Plan.

The report finds the need for digital skills training in New Mexico to be high and the current provision of training to be low. For New Mexicans to receive the training in digital techniques that they need, a committed and expanded training program must be developed that can integrate training into appropriate existing institutions and support those institutions already providing training. The report identifies existing institutions that are strong candidates for becoming training providers and includes strategies for building a program to institutionalize training within these existing programs over a period of 3–5 years. The report also recognizes that, with few exceptions, public libraries are at present the sole institutional provider of digital skills in most communities. This strategic plan recommends support for libraries so that they can continue to provide and expand these vital training offerings.

To achieve these ends, the report makes these specific recommendations:

- Establishing a statewide digital skills training initiative that will work with target institutions to enable the integration of digital skills training into these organizations within 3–5 years. The initiative should include development of materials, acquisition of dedicated training equipment, locally appropriate delivery options, training for trainers, online access to statewide training information and resources, and the development of funding channels for institutional sustainability.
- Supporting local libraries for ongoing and expanded training through increased funding on the state level, including the use of General Obligation (GO) bonds, state library grants-in-aid, and sub-grant awards of Library Services and Technology Act dollars from the New Mexico State Library (NMSL).
- Developing partnerships on the state and local level to promote and facilitate institutionalization, maximize opportunities, and build funding resources for all institutions

providing or developing training in digital skills. These partnerships should include cross-agency collaborations as well as partnerships between public and private entities.

- Establishing a short-term fund for training equipment that can overcome barriers and boost implementation of training in small, rural, or under-funded facilities by providing computer training equipment packages at no or minimal cost.

As the use of digital tools increases in the development of economic, educational, and health sectors, and as these tools become increasingly important elements in the access and use of basic government and agency services, the need for digital technology skills will grow. While it is reasonable to suppose that, over time, the population will gain better access to the training needed to obtain these skills, this can only occur if that training opportunity is integrated into those institutions that are the natural providers for these skills—the libraries, adult education and business programs, senior and community centers, and the government agencies that serve those in need of employment, health care, or human services support. To meet this growing need, both state and local entities should continue to seek resources that can enhance regional capacity to provide training and maintain local expertise in technical training skills. This report also underscores the disproportionately low digital skill levels of older adults as well as of those who come from Hispanic or Native American households, have low educational achievement levels, or live at or below poverty level. Ongoing consideration should be given to ways in which these sectors of the population can gain and retain the digital skills needed to allow their participation in civic and economic life and prevent their slide into further disproportionate disadvantage and inability to contribute to community well-being. These considerations should include solutions for obtaining low-cost equipment and services as well as access to training in digital skills for these sectors of the population.

Chapter 1: Introduction

The New Mexico Broadband Program (NMBBP), a $4.8 million statewide grant from the National Telecommunications and Information Administration (NTIA), provides mapping, planning, capacity building, and technical assistance of and for broadband access and services. The grant, awarded for a period of five years and managed by the New Mexico Department of Information Technology (DoIT), includes, as a component of technical assistance, support for digital literacy training. Digital literacy supports broadband use by providing the knowledge and skills that allow individuals to leverage broadband for a range of benefits, including greater educational, health, and economic, opportunities. To help build this enhanced capacity for broadband use, the NMBBP has supported digital literacy efforts, developing curriculum resources, delivering a pilot train-the-trainer program, and providing targeted outreach and support to a range of communities and groups.

Five years ago, the concept of training in basic computer skills was new, a topic slowly emerging out of university computer science departments and stepping into the public spotlight. At that time, digital literacy was an unfamiliar term, primarily understood in academic circles in reference to traditional literacy theory and only slowly becoming recognized as a new form of acquiring, interpreting, sharing, and using information. Today, these skills are recognized as essential requirements for professional work, for the tasks of daily living, and for the economic viability of communities. People no longer question whether or if digital literacy is important. Instead, they want to know how and where it will be delivered to the populations in need of these skills.

The New Mexico Digital Literacy Strategic Plan explores the “how” and “where” of digital literacy training in New Mexico. The plan reviews the initiatives, projects, and reports that have been completed under the NMBBP and assesses their implications for digital literacy training needs in New Mexico. This strategic plan explores digital literacy training in other states in which statewide training programs have been established and assesses New Mexico’s progress in relation to these other efforts. It reviews the significance of digital skills in the key community sectors of education, health, and economic development, and provides discussion of the state regional digital literacy pilot project and broadband subscription and Internet use in New Mexico. The analysis of these findings is summarized in a discussion of lessons learned and underpins the policy recommendations that are made for digital literacy training in New Mexico.

Chapter 2: Comparative Analysis—Digital Literacy in New Mexico in Relation to Other States

In a report released by the Digital Literacy Task Force of the American Library Association in January of 2013, the authors discussed the "significance of digital literacy to individual and community success…."[1] The report went on to note that:

> *The public's attainment of twenty-first century digital literacy skills is essential if the United States is to compete economically, educationally, and intellectually in the global environment…. Broadband Internet access is essential, but access alone is not enough. Basic computer skills and high-level cognitive skills for finding, evaluating, ethically using, creating, and sharing information also are required for digitally inclusive communities.*[2]

The report outlined the many benefits of digital skills and discussed the challenges and successes of various programs in providing digital literacy training. While the report focused on the role of libraries in providing computer skills education, it also underscored the growing trend of addressing this need on a wider state and local level.

State-based and regional programs for digital literacy were first incentivized, starting in 2009, by the NTIA and the Broadband Technology Opportunities Program (BTOP) developed under NTIA through the American Recovery and Reinvestment Act. Both programs offered grant funding to state and local agencies for broadband adoption and training programs. These funding dollars provided the baseline of initiatives in digital literacy education that have, in many instances, grown into statewide planning and education programs.

Figure 1: Minnesota Digital Literacy Certification

Since 2009, the "need to assess and instruct adult learners in digital literacy has become increasingly clear to program directors, state agencies, and adult education innovators," as well as to state and local leaders.[3] On a national level, the development of the federal website, "digitalliteracy.gov," run by NTIA and the U.S. Department of Commerce, is a testament to the perceived importance of digital literacy skills. Some states, such as Minnesota, embarked on widespread programs early on, creating state standards and certifications as benchmarks of digital competencies. Many other states have sought and found solutions to the "digital divide" that separates those with digital knowledge and skills from those without. Each state has taken a unique approach to the challenge, one that reflects the mission of the state, the unique character of the region, and the resources from which the state can effectively build.

Vermont

Vermont developed a robust statewide digital literacy training program during the last five years. Their training was part of a larger web-based network of information and resources for digital learning, online community building, and small business development, established through the e-Vermont Community Broadband Project and led by the Vermont Council on Rural Development. Built by a partnership of regional organizations that included the state Small Business Development Centers (SBDCs), the state college system, public libraries, and other government agencies, the e-Vermont project included several key components:

- Training in basic and business skills to 24 communities,
- Construction of municipal websites,
- Creation of forums for online communities conversations and network development,
- Identification and support for targeted community needs by e-Vermont resources.

Digital skills training was thus embedded in a rich fabric of digital platforms and tools that functioned to enable a larger project of building Vermont rural communities into "prosperous and sustainable entities" through partnership, community facilitation, and responsiveness.[4] The project worked solely on the local level, underscoring the value of community and regional integrity implicit in the project's goals and efforts.

Vermont's work in building digital skills in communities consisted of many parts, as identified in Table 1.

Table 1: e-Vermont's Digital Literacy Training Program

Widening community exposure to the online world by increasing public access computers	By boosting the number of computers available for free use, especially in libraries and through schools, interest and engagement would increase.
Establishing hot spots visited by mobile computer labs and interns.[5]	This created an "atmosphere of access" and set the stage for trainings that provided over 60 workshops and trained more than 450 participants.
Creating online webinars and tutorials	These included many in online business development, which encouraged preparation in basic skills in order to participate.
Providing one-on-one tutorial sessions	These were intended to build the "threshold skills" needed in order to take advantage of the webinars and online tutorials.
Deploying intern tutors through a partnership with higher education	Through partnership with the Vermont state colleges, interns were placed in local libraries to offer one-on-one support for new learners that would build the basic skills needed to utilize the online learning tools.
Developing new trainer programs in partnership with higher education	The Vermont State Colleges created a Train-the-Trainer program for instructors that emphasized principles of adult learning and provided simple steps for introducing technical skills.
Promoting online skills for businesses	Offerings provided training in business planning, social media marketing, mobile applications, and business pages on Facebook. Training workshops were offered in the first year of the program.[6]
Distributing technology to schools	With support from Digital Wish, e-Vermont distributed over 1,300 netbooks to students in Vermont school classrooms.[7]

In their conference on the digital future for Vermont, held in 2012, the participants in the e-Vermont program noted the importance of continuing digital skills training to help the state meet a multitude of

needs, especially those of new business and local economies. The conference recommendations included providing "outreach programs and training in baseline digital literacy alongside training tailored to the needs of particular groups" to ensure support for, and participation in, the growing digital economy.[8] Especially important was media literacy education that would enable individuals to find reliable information and to discriminate between good and bad sources. The conference concluded with a recommendation that a statewide system be developed, based on best practices and collaboration, to "implement a digital competency strategy across the state"[9] and "[p]rovide professional development for educators in cyber safety, global citizenship, and digital and information literacy training."[10]

The Vermont project is an example of a successful program that

- integrated digital training into a larger framework of community and economic development,
- linked training efforts to existing agencies and programs,
- emphasized and enhanced strong community networks in the state,
- provided immediate applications of digital tools for a variety of engagements.

The creation of broad partnerships with a wide range of agencies allowed the program to address needs through the expertise of several institutions rather than only through one. Partnerships also increased the perspective of the project and, through diversity of outlook and expertise, created greater opportunity for success.

Rhode Island

In 2010, Rhode Island developed "the Broadband Rhode Island (BBRI) initiative within the Rhode Island Economic Development Corporation (RIEDC)."[11] Early in the process, the project included a strong emphasis on digital literacy education and training: "BBRI works to create new opportunities by expanding broadband use ***and*** digital literacy across Rhode Island" (emphasis added).[12] The state has since achieved high broadband quality, with coverage and speeds ranking in the top measures for each. Yet in 2012 BBRI reported that for state residents, the ability "to use these technologies to help improve … lives through online learning, securing jobs, and accessing government resources…" was still low.[13] Emphasizing the importance of digital skills and capability, the report went on to point out that "[f]or schools, health care facilities, and government agencies to fully benefit from these capabilities, their constituents and students must become digital citizens – with Internet access AND know-how."[14] Recognizing that without digital literacy training and education, Rhode Island would remain at a competitive disadvantage, the state devoted its energies to developing and disseminating training in computer and digital skills to all Rhode Islanders.

BBRI took steps to create a training program model that would reflect commitment through dedicated resources and implement a strategy with broad reach across the state and over a range of sectors.

Key components of that effort included:

1. **Rhode Island created a separate digital literacy program within Broadband Rhode Island.** While remaining housed within the BBRI program, digital literacy became a separate program and initiative, on a par with mapping, research and policy, and business support in its significance and status. By raising digital literacy education and training programs to this level, BBRI emphasized the significance of training in the overall process of broadband adoption and use, and increased awareness of digital literacy training resources across the state.

2. **The program developed a dedicated web portal for digital literacy.**
   BBRI developed a website that could act as a centralized hub for information and resources about digital literacy education and training in the state. By creating this "one stop shop" for resources and training, the website provided a centralized location for training materials, train-the-trainer resources, and locations for training. This website streamlined access to information, eliminated the redundancy of creating separate sites at different institutions, and acted as a virtual base for the program and the community of digital literacy educators and learners. In addition, the site was a visible measure of the state's training efforts in digital skills, important for in-state stakeholders as well as for businesses and companies outside the state considering relocation.

3. **The program developed statewide standards and curriculum.**
   Rhode Island chose to develop and brand its own curriculum materials, blending existing resources with supportive information and supplemental materials. Unique curriculum additions were created for basic modules that emphasized universal design for a range of learning styles and creating materials that were easily adapted to the needs of those with disabilities.

4. **Rhode Island developed a train-the-trainer program for digital literacy instructors.**
   The state recognized that, in order for training to become widespread, the digital literacy program must offer training for other trainers. Materials and instruction for trainers were added to the website, which also provides screencasts and handouts of training workshops, as well as opportunities for scheduling train-the-trainer sessions. Workshops for trainers have been provided throughout Rhode Island as part of its digital literacy initiative.

5. **Through partnerships, Rhode Island integrated digital literacy curriculum into existing institutions.**
   Through partnerships with other agencies, including local libraries and the Rhode Island Department of Education (RIDE), BBRI's digital literacy curriculum has been implemented in local libraries and through the Adult Basic Education (ABE) program in the state. Library staff and ABE instructors were trained as trainers, and local libraries received separate grant funds to provide or enhance public computer centers across the state. ABE programs are staffed with technology coordinators to assist them in better incorporating technology into their teaching.

6. **The program created an online business incubator to support local businesses.**
   This innovative concept provides online instruction in business skills. The incubator relies on the use of online platforms for instruction and is still in a pilot stage.

The Rhode Island program shows the strength of communities working in collaborative partnership with shared goals. The widespread recognition amongst Rhode Island leaders of digital literacy as a key component of economic opportunity and growth has allowed them to dedicate resources from a number of directions to spreading and improving digital skills across the state. The willingness to engage both communities and individuals and to pursue a multi-pronged approach to increasing skills have given the Rhode Island program strength, success, and the capacity to impact the economy of the state in positive and sustained ways.

Colorado

In Colorado, digital literacy had developed in two separate programs, one within and one outside of the larger statewide broadband initiative. Within the Colorado Broadband Program, led by the Office of Information Technology, the broadband planning group has included efforts to develop elements of digital literacy, primarily distance learning opportunities and some community-based planning for training on the local level. Most of the work in developing digital literacy training has occurred outside of the state broadband initiative, through the Colorado State Library (CSL), which, in 2010, received grants to provide digital literacy education from both the BTOP and the Bill and Melinda Gates Foundation.[15] These grants provided the opportunity to establish Public Computer Centers (PCCs) and offer training classes in digital skills across the state.

Figure 2: Colorado State Library Web Page for NTIA Computer Centers Grant

The CSL program was notable for achieving numerical success beyond its projected goals, delivering training classes to over 30,000 people, and providing over a third of a million one-on-one individual tutoring sessions.[16] CSL reached these levels by implementing the strategies and goals detailed below:

1. **The program used new computer centers as outreach for training.**
   While focusing on developing PCCs, CSL used the centers as outreach platforms to draw people in for training. This cross-over between deployment of technology and digital literacy training created a synergy that sparked interest, attendance, and awareness of digital literacy and broadband overall and made participant more likely to return to the centers to take additional classes. This overlapping use of equipment as outreach was a strategic success.
2. **The project developed and leveraged broad state-level partnerships.**
   Colorado built broad partnerships, including collaboration with literacy projects, adult education, library groups, and the departments of labor, employment, health care policy and the information technology. All worked together to deploy resources across agencies and

sectors. This scale and level of cooperation proved exemplary and allowed Colorado to effectively combine programs, such as skills training and workforce preparation, provided through the virtual workforce centers located in libraries.[17]

3. **Trainers taught local staff training skills through a train-the-trainer program.**
   CSL trainers distributed expertise by training library staff and PCC directors to deliver classes and tutoring sessions. "The BTOP team developed an extensive 'Train the Technology Trainer' program for PCC staff and volunteers." [18] Overall, CSL "provided 470 hours of instruction … to 2,883 technology trainers" at over 80 libraries.[19] This distribution of skills to the community level created sustainable programs that ensured ongoing digital literacy education could occur in the state.
4. **The program focused on training trainers and omitted time-intensive curriculum development.**
   This was a departure from the choices made by other programs, which often included extensive curriculum development. The Colorado project streamlined this aspect of the project by providing brief lesson plans and short outlines for trainers. This reduction of effort created time for investing in instructor training and developing a wider range of training topics.

The digital literacy training project at CSL presaged in many ways the later developments in digital literacy training programs that would occur after 2011. Recognizing the redundancy of the basic skills curricula that were being developed, training projects began to instead leverage existing resources, adapting them as needed, rather than create redundant curriculum materials. The Colorado program also showed the success and impact that strategy of distributing and decentralizing training can achieve. By concentrating on spreading training capacity, the Colorado project was able to disseminate training skills that will sustain long-term digital literacy education in the state.

Summary Findings

A comparative review of these three programs, as shown in Table 2, with New Mexico added for comparison and discussed afterward, reveals common strengths and provides a baseline against which to assess the state of New Mexico's digital literacy training efforts.

1. **All programs developed a dedicated, state-level program or initiative in digital literacy**.
   In Vermont and Rhode Island, digital literacy training was integrated into economic development and broadband; in Colorado, it was embedded within the CSL PCCinitiative. These allegiances gave digital literacy an institutional base and helped drive the training projects. In addition, each program had strong state-level leadership, through team, committee, collaborative, or individual effort.

2. **Training programs in these states created state-level partnerships that facilitated local programs**.
   On the state level, partnering amongst several agencies, such as economic development, education, and workforce training, allowed programs to pool expertise, unite resources, and reach a wider audience. State-level partnerships made a broad network of institutions available for delivering training, which facilitated implementation at the local level.

3. **Successful programs invested in regional and community collaborations**.
   By coordinating resources at the local level, including equipment, facilities, expertise, and trainers, these programs increased efficiency and helped strengthen communities through a cooperative effort.

4. **These programs all distributed knowledge and expertise across communities**.
   This dispersion occurred largely through development and training of others trainers. Both states were able to reach large audiences through open, engaging, and community-based education platforms.

5. **All programs addressed the issue of training along a range of fronts**.
   All three of the state programs approached the need for digital education more broadly and aimed to develop a larger digital experience, including:

   - exposure and access to more computers,
   - availability of training opportunities across a range of institutions,
     - in schools and centers, for students and the needy,
     - in schools, libraries, tribal centers, senior centers, farms, art and business centers, and community colleges.

   This inundation of experience helped define the importance of broadband and digital skills in the communities. By investing heavily, deeply and broadly, these initiatives raised interest, awareness, and need, building an environment that fostered ongoing success.

6. **All programs created a strong web presence for the digital education projects.**
   Websites offered online resources for trainers, learners, and communities, showcased program successes and provided access to information, promoting ongoing inquiry. They offered communities a centralized hub from which to begin discussion, planning, and implementation of digital skill training.

Figure 3: e-Vermont's Digital Literacy State Website Portal

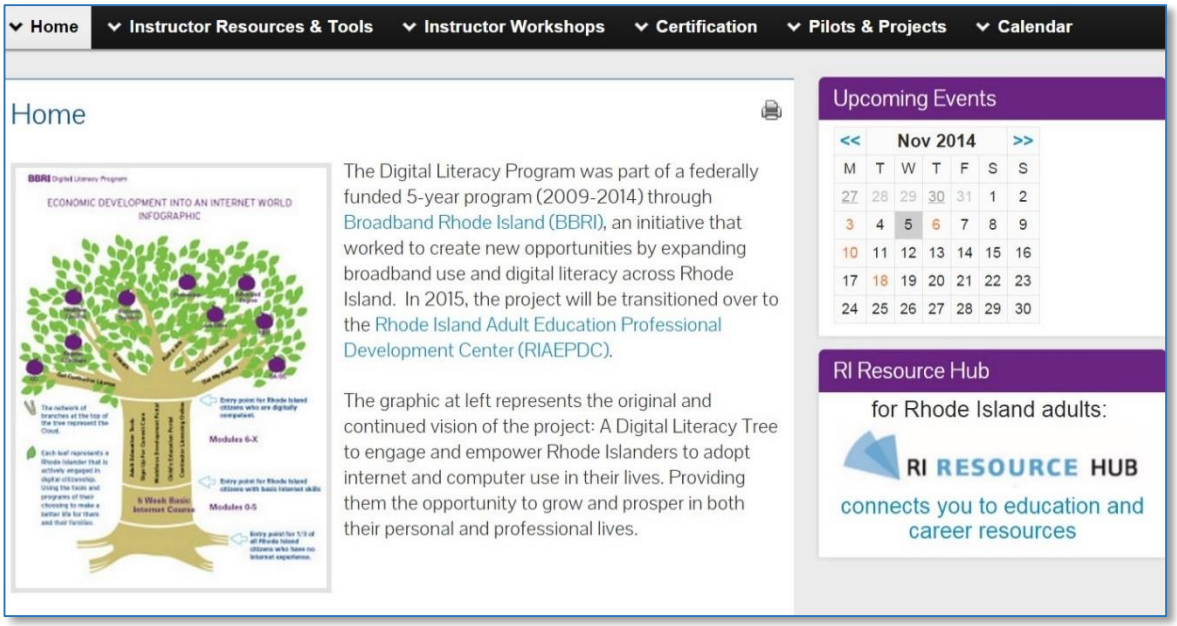


Figure 4: Broadband Rhode Island Digital Literacy Web Page

Table 2: Comparative Chart of Digital Literacy Programs in Three States and New Mexico

	Vermont	Rhode Island	Colorado	New Mexico
Statewide program or initiative	Yes. Separate distance learning (DL) program within e-Vermont; website, training, and partnerships	Yes. Separate DL plan within BBRI statewide plan. Clear focus on DL in statewide initiative	Yes, though divided. State Office of Information Technology (IT) carries part including DL; CSL carries basic training; lacks business training	Partial. Ends 1/31/2015. NMBBP through DoIT provides support; no state-level program, leadership or initiative extends beyond this.
Linked to other state agency	Yes. Rural economic development led with expertise and agenda.	Yes. Economic development created as broadband use and economic strategy.	Yes. Divided between Office of Information Technology and CSL	Partial temporary link to DoIT through NMBBP.
State partnerships	Libraries, Vermont Council on Rural Development, state colleges, schools (for computers), community groups, e-Government	Libraries, ABE program, state level	Libraries, virtual workforce training centers, community and tribal computer centers	None at present. Previous temporary partnership between DoIT and NMSL.
Community base, community partnerships	Yes. Local institutions, towns + suggestions from individuals + community conversations + local government issues.	Yes. Local libraries and ABE programs. The small size of RI makes local programming easy.	Over 88 partner institutions; libraries, computer centers, some community and senior centers.	Previously, FFNM at libraries; NMBBP at 11 pilot train-the-trainer locations + 3 regional pilot plans + communities + libraries, senior, pueblo, tribal centers, local businesses, Internet service providers (ISPs). Ends 1/31/15.
Decentralize and distribute training capacity	Yes, through online training plus tutorials for threshold skills within communities, so both online and ground network distribution	Yes, through train-the-trainer program, libraries and ABE. Small size of the state allows success with centralized programming.	Yes, through Tech Trainer program from CSL that trained all computer center and library staff across the state.	Not yet. FFNM did not include sustainability; NMBBP online resources and train-the-trainer pilot stage only.
Components	Training + online resources + computers for schools and centers + tutoring interns	Computers + training + train-the-trainer + web presence + computers for libraries	Computers + computer centers + training classes + tutoring sessions + train-the-trainer + web presence (limited; within CSL)	FFNM: Training + computers to libraries; NMBBP: curriculum + train-the-trainer + web presence (limited; within DoIT)
Centralized web presence	Yes; central feature is the building strong online communities and engagement	Yes; primarily for training; curriculum for trainers, scheduling training sessions.	Yes, though limited as located within the CSL website. Includes information for tech trainers.	Yes, though limited as located within DoIT website; Includes NMBBP reports, resources, + training curriculum and resources.
Standout feature	Community development and engagement; linking real and virtual communities	Excellent infrastructure; understanding of importance of DL in leveraging broadband for economic development and other needs.	Commitment to train-the-trainer dispersion of knowledge and skills to the local level and local provider for sustainability	Opportunity for state-level programs, leadership, partnerships; opportunity for strong regional plans; relevance for economic development.

In relation to these benchmarks, New Mexico has made some successful strides. Over the past five years, two state-level grant programs have provided support for digital literacy education in the state. The first of these, Fast Forward New Mexico (FFNM), was funded by a BTOP grant to the NMSL and provided digital literacy classes in basic and business skills in 17 local libraries across the state.[20] Focusing on classroom engagement and hands-on learning, the program delivered training to over 5,500 attendees between 2010 and 2013, providing instruction in Spanish, Navajo, and Dine.[21] In addition, FFNM made training laptops and technical support available at a reduced cost to those participating libraries that were able to expend funds on the equipment, thereby building resources at the local level for community digital literacy programs. The Fast Forward New Mexico project provided a strong and successful first step in basic computer and Internet skills training for the state. Change in leadership prevented the program from moving to sustainability and distributing those training skills to local communities. As a result, a decentralized model of training was never implemented, and, with few communities able to support training after the grant project expired, most digital literacy training in the state was ended.

A second state-level grant project, the New Mexico Broadband Program, was initiated at the same time as the Fast Forward project. Funded through a five-year grant from NTIA, the NMBBP focused on broadband mapping and infrastructure, but also contained components for planning, capacity building, and technical assistance. Through these supporting elements, the NMBBP created materials for a train-the-trainer program,

Fast Forward New Mexico (FFNM)

Project:	Broadband Adoption and Training
Grant funder:	National Telecommunications & Information Administration (NTIA)
Grant amount:	$1.5 million
Time frame:	Jan 2011–Jan 2014
Leadership:	New Mexico State Library, in partnership with UNM Community Education, UNM-Los Alamos, Global Center for Cultural Entrepreneurship, Community Action Agency of Southern New Mexico
Goals:	Increase broadband adoption through outreach and training

New Mexico Broadband Program (NMBBP)

Project:	Broadband Mapping, Availability, and Adoption
Grant funder:	NTIA
Grant amount:	$5 million
Time frame:	Jan 2010–Jan 2015
Leadership:	New Mexico DoIT
Goals:	Define broadband availability and enhance its adoption through mapping, planning, capacity building and technical assistance

including curriculum, a toolkit for those interested in providing training, and a train-the-trainer pilot, that brought training workshops to library staff and other local champions in a limited number of locations in the state. The NMBBP also provided support for regional pilot projects to assess needs and assets for digital literacy training in several communities, and to help build partnerships and programs for training in local areas. Additionally, the NMBBP commissioned research and reports that included information on digital literacy and broadband adoption, digital literacy training at senior and pueblo senior centers, and digital literacy in the key community sectors of health, education, and economic development. As a concluding element of the project, the program supported development of a broadband education and digital literacy website.

In combination, both FFNM and NMBBP have contributed strengths and achieved successes. FFNM provided successful outreach and training programs and built strong curriculum based on instructional practices that could be used by other trainers. The NMBBP developed and delivered train-the-trainer workshops and mobilized and coordinated community training efforts and partnerships. Each program allowed digital literacy programming to be linked to larger state agencies (the New Mexico State Library and the Department of Information Technology, respectively), providing state-level support and the potential for state-level partnerships.

Yet despite these individual successes, the two programs did not create a larger, shared, and sustained partnership for digital education on the state or local level. This lack of integration meant the programs built in parallel rather than in synergistically. As a result:

- A patchwork rather than a united approach to digital literacy training was created. This kept trainings and their support networks siloed, each unable to effectively leverage the efforts of other programs.
- The range of fronts on which digital literacy programs could operate was limited. Each program was aligned with specific institutions, but these alliances were never developed into shared partnerships that could present training, equipment and outreach in unison.
- Sustainability was weakened by lack of partnership and isolation of programs. Where a joint effort could have increased opportunities for sustainable solutions, a segmented effort narrowed resources and options.

State programs have been most successful when they combine, through partnerships and strategic coordination, efforts and resources to provide digital training and outreach. The more segmented nature of the digital literacy programs in New Mexico has precluded the advantages that a broader and consolidated application of resources might have achieved and attenuated its impact.

New Mexico is well-positioned to successfully capture and build on the advantages of earlier programs for digital literacy training. To do so requires a decisive commitment at the state level. Creating a dedicated digital literacy program that provides continuity of existing efforts will build unity and consistency for digital literacy education in New Mexico. The program should incorporate established strengths, including the materials and processes that have made training, outreach, and partnership successful up to this point. Key goals for the program should include enhancing regional capacity for training and developing resources for/on the state and local level. These efforts will depend on strong leadership and healthy partnerships at each tier of the program.

Chapter 3: Digital Literacy and Strategic Sectors: Education, Health, and Economic Development

Increasingly, digital literacy has been recognized for the specific capacities and application that it enables. No longer seen as a skill set for addressing only the basic skills of computer manipulation, browser use, or elementary document creation, digital literacy is now recognized as a valuable basis of sector-specific capabilities. These capabilities are especially important in creating stability and growth for education, health, and economic development, all of which are essential for the state's future success. Broadband and digital literacy can contribute to these sectors by improving access, maintaining viability, and allowing competitiveness in the 21st century.

In November of 2013, the NMBBP released the New Mexico Broadband Assessments and Recommendations: Education, Health Care, and Economic Development report. The document, prepared by a team of experts and practitioners from the fields of health, education, and economic development, surveyed the professional communities in each of these disciplines, measuring the current use of broadband, the potential needs of the profession for high-speed connectivity, and the existing technical resources in the state. Based on these findings, the reports listed recommendations for policy, infrastructure development, and resources for potential funding. While the report did not directly engage the skills that would be needed to use broadband effectively in these three sectors, the need for basic computer and Internet skills is implicit throughout the report. In fact, the recommendations for broadband use in all three areas require strong and far-reaching digital competencies.

Education

Education is a field in which the need for technical savvy is becoming a necessity. The report notes the increasingly important role technology has come to play in education during the past two decades, in terms of the skills and knowledge that must be taught, the level of technical expertise required by teachers, and the equipment and processes needed by schools and districts to track and document student progress. With online communication, planning, reporting, tracking, and testing now the norm, every member of the school community must be competent with computers and online applications.

Technology Applications in NM Schools

The following technologies are being used in classrooms across New Mexico, but without specific standards:

- Educational software
- Keyboarding
- Testing
- Teacher paperwork
- Individualized Education Plans
- Teaching materials and tests
- Drawing and illustration programs
- Smart Boards
- Classroom websites
- Video streaming
- Presentations (PowerPoint, video, websites, digital projection, etc.)
- Family resources (homework, teacher communication, grades, etc.)

Figure 5: Technology Applications in New Mexico Schools[22]

- Teachers and parents must be able use interactive websites to access grades;
- Teachers and administrators must be able to engage online learning for professional development;
- School staff must have skills with websites and databases, to update information or enter and retrieve student data.

For students, the range of skills must be even broader, allowing them to:

- Access assignments and online textbooks,
- Complete homework online,
- Conduct research with online tools, and produce and share work in digital environments.

With the adoption of the Common Core curriculum by the New Mexico public school system in 2010, those needs have become even more pressing, increasing the uses and applications of technology, and measuring, in part, both student and teacher success on the basis of their capability with digital tools. These demands bring new challenges to the school community. As the report notes, "schools need support to access technology and use it well."[23]

While the report limits its considerations to the K-12 window, it is important to note that other digital skills are needed by students in the steps they take to exit secondary school and move on to the next phase of their lives.

1. Students desiring to continue their education in college will need an expanded list of skills to successfully complete the application process, including:
    - Searching college websites online,
    - Studying for and taking college admissions tests online,
    - Completing and submitting online applications online,
    - Applying for financial aid online,
    - Speaking with college admissions officers through social media,
    - Taking virtual campus tours,
    - Interviewing online,
    - Communicating with students and faculty through social media.
2. Students seeking employment after high school will need an equally broad set of digital skills to find and apply for work:
    - Searching for employment online,
    - Applying for unemployment online,
    - Creating online resumes,
    - Completing and submitting electronic application forms,
    - Following up on applications with email,
    - Exhibiting adequate technical expertise to succeed in a new job.

The requirements for post-secondary experiences add to the need for high digital capability in graduating students.

Health

Just as digital literacy is necessary for the profession of education and for the school communities that profession serves, it is similarly necessary in the field of health. The report underscores the degree to which health care providers, medical facilities, and medical support staff are all coming rapidly to rely on new health care technologies that deliver information and access to medicine more efficiently and rapidly while reducing costs. "Telehealth, electronic medical records, remote monitoring, and integration of mobile devices"[24] are just some of the components of a growing array of medical technology utilized by larger numbers of medical professionals. These new systems and new equipment will not only "increase the demand for broadband services in New Mexico,"[25] but will also raise the need for high-level digital skills needed by many working within the medical profession.

While some elements of medical practice will involve high-level technical and medical abilities, other segments of the profession will require more basic skills, as described in the examples below.

- Understanding of databases will be critical for those using medical data and information exchange systems. These records require high levels of facility and skill in all who use them. Poor understanding of the technology may mean updates are performed incorrectly, resulting in inaccurate medical information that is spread across a shared network.
- More advanced technical skills are needed in the developing field of "health informatics" to provide support for health care providers with more complex technical and database management tasks. These positions are increasing between 50% and 230% and research on trends in health care provision anticipates a significant shortage of workers with these skills by 2018.

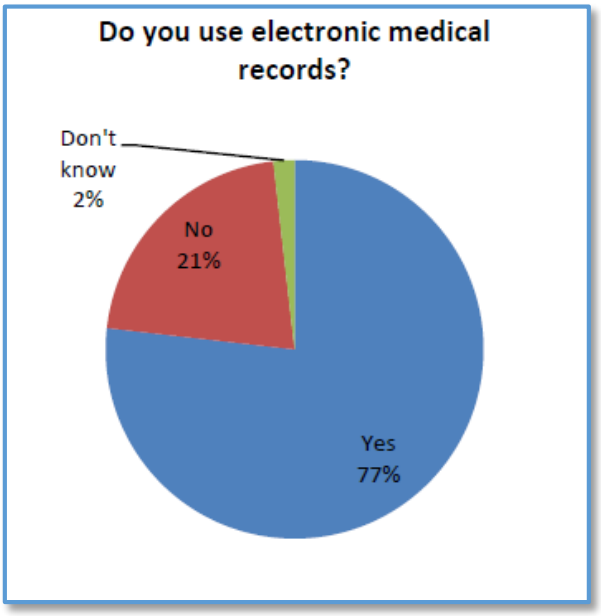


Figure 6: Percentage Electronic Medical Records Use in New Mexico[26]

- As more medical information becomes available online, digital skills become an essential component of health literacy in the general public. As a recent article in the *Guardian* noted, while technology is allowing more opportunities for people to "complete health transactions online, such as ordering repeat prescriptions, checking hospital reviews or booking hospital and GP appointments,"[27]only those with adequate digital skills will be able to take advantage of these services. The article goes on to point out that "People who don't have digital skills, confidence or access will lag far behind in being able to manage their own health, leading to worse outcomes."[28] The National Library of Medicine estimates the economic impact of "low health literacy to the U.S. economy is between $106 billion to $238 billion annually."[29]

Health Care and Technology

In addition to the high-level technical needs of the medical profession and medical education, advances in technology impact medical care and access for everyone:

- Medical office staff need increasing skills working with data and digital records.
- Medical providers need increasing support from technically expert staff.
- Patients need increasingly high levels of technical skills to maintain the "health literacy" needed to access medical information and quality care.

For more on health literacy and its economic costs, consult the National Library of Medicine report, *Low Health Literacy: Implications for National Health Policy.*

Economic Development

At a time in which New Mexico is moving rapidly to build economic development opportunities across the state, the importance of broadband and the opportunities it provides is well recognized as a vital component of future economic growth. As a 2012 report by Columbia Telecommunications Corporation noted in the opening paragraph:

> *The importance of broadband for economic development cannot be overstated. Many experts consider access and acceptable speed the key to business expansion. Government and university research studies find a strong link between broadband and economic development job growth. A U.S. Small Business Administration survey found high speed Internet to be as essential as water, sewer, and electric utilities*[30]

The report highlights the need for broadband in three components of economic development—small business growth, attraction and development of large employers, and "long eagles," defined as "professional, independent contractors and consultants….[who] typically work from home and increase the state's economic base by bringing out-of-state money into New Mexico."[31]

While not directly discussed in the report, digital literacy is widely recognized as a critical element in successful economic development. Digital skills enable small businesses, large employers, and "lone eagles" to harness the capacity which broadband provides for economic growth and stability.

- For small businesses, digital skills provide the window into a global digital economy, reached through online marketing and social media outreach.
- For larger employers who might be attracted to the state, digital literacy skills in the New Mexico population offer a qualified workforce able to succeed in new jobs. Even those companies dealing in manufacturing or retail will require employees with solid skills in technology and social media to facilitate communication, manage inventory, meet product standards, and more.
- For "lone eagles," digital skills provide the platform for producing information, providing services, and marketing their expertise.

Digital literacy is commonly recognized as a tool that can build and support economic development along a range of fronts. It is the foundation of knowledge that will allow the state to take advantage of all the opportunities that broadband brings. Digital skills leverage economic opportunity through a variety of channels:

- increasing employment levels by raising skill levels of the unemployed,
- enhancing the workforce by increasing its technical capability,
- enhancing the success of small businesses by providing access to online markets,
- attracting new businesses and employment opportunities by offering skilled and vibrant communities.

Without digital skills, these goals will remain elusive.

Digital Literacy Initiatives in European Nations

Canada

Canada launched Digital Canada 150 to provide high-speed Internet to 98% of Canadians. The program includes an education effort to close the gap in digital skills for all Canadians.
Digital Canada 150

United Kingdom

Concerned by the inability of many to access key government information and services as more and more of these go online, the country has adopted a program to decrease number of British without digital skills by 25% over the next 1½ years. Recent studies in the UK also suggest gaps in IT training for as many as 11,000 new jobs per year requiring digital skills.
Government Digital Inclusion Strategy

European Union (EU)

The EU is developing a digital agenda for Europe that acknowledges need for digital skills in "90% of jobs in the near future" and for government services and includes steps to open Social Fund for digital skills training.
Digital Agenda for Europe

Scotland

Noting that digital skills promote economic growth in all areas and noting a projected increase of 15% in jobs involving IT skills, Scotland proposes plans that include improvements in digital skills training within education and better IT skills for workforce training.
Skills Development Scotland

Summary Findings

Although the discussions that appears in the NMBBP report on broadband use in education, health, and economic development do not engage the topic of digital literacy directly, the findings and recommendations for each area all assume digital skills as pre- or co-requisites to advances in these sectors. Without a strong foundation in digital skills, individuals are not able to adequately participate as professionals or clients in the arenas of education, health, and economic development. Digital skills competency is no longer an option; it is a necessary basis that undergirds these key professions and the services and benefits they deliver.

Barriers to development of digital skills in communities do not share the technical and infrastructure hurdles that characterize barriers to broadband. In that regard, they are easier to surmount. Significant advances in meeting the education and training needs in these skills can be met by:

- Inserting digital literacy education into the mission of existing institutions, such as ABE, literacy, SBDCs, and senior centers;
- Supplying training support and dedicated funding to institutions supplying training in digital skills, especially libraries, which currently act as key training providers;
- Implementing aggressive intern and tutor programs to provide one-on-one learning for individual clients and professionals;
- Centralizing and coordinating information and resources on the state and local level to streamline access to resources and eliminate redundancy;
- Providing state-level support and leadership for digital skills training and the partnerships needed to support these efforts.

A final point to be considered is how changes in the way in which information about health care, wellness, and medication is communicated will impact the lives, health, and well-being of seniors. This is significant not only because seniors represent a large and growing percentage of New Mexico's population, but also because seniors typically display the lowest use of broadband and the lowest level of skills with digital technologies within a given demographic. This means that for that portion of the population for whom information about health will be amongst the most significant of resources, that information may be difficult to access. Providing seniors with training that will enable them to access information and health care quickly and effectively should be a component of all training programs.

Chapter 4: Digital Literacy Regional Pilot Project

The Digital Literacy Regional Pilot Project grew out of the larger Regional Broadband Implementation Plan (RBIP) developed through the NMBBP. The goal of the RBIP was to create a "targeted effort to bring regional stakeholders, providers, and the State together to facilitate the expansion and promotion of broadband use in unserved areas of New Mexico."[32] Three pilot regions were chosen for the project: Northeast Economic Development Organization (NEEDO), the Northwest New Mexico Council of Governments (NWNMCOG), and the Southwest New Mexico Council of Governments (SWNMCOG).

Table 3: Pilot Regions and Associated Counties

Northeast (NEEDO)	Northwest (NWNMCOG)	Southwest (SWNMCOG)
Colfax	Cibola	Catron
Guadalupe	McKinley	Grant
Harding	San Juan	Hidalgo
Quay		Luna
Mora		
San Miguel		
Union		

The Digital Literacy Regional Pilot Project (DLRPP) was developed as a companion program to the broadband pilots in each of the pilot regions. The goals of the digital literacy pilots were several:

1. To develop a broad digital literacy assessment of the region, focusing on community needs and resources for digital literacy education and training;
2. To provide information and support to communities in their efforts to build local digital literacy training programs, including assistance with outreach, support for coordination of resources and networks, and access to statewide assistance;
3. To offer observations, suggestions, and recommendations for next steps in building sustainable digital literacy education and training in the community.

Activities included site visits, presentations to local groups, discussions, phone conferences, email exchanges, and interviews with community and state stakeholders. The first stage of the project concluded with a summary report for each of the regions, describing resources and needs in each community and documenting some of the activities in digital literacy education that were in deployment or development.

Northeast Economic Development Organization

The region served by NEEDO, comprised of seven counties, is both the largest, in terms of the number of separate regions it entailed, and the smallest, in terms of population. The scattered population base has been further thinned over the past few decades by a pattern of rural flight that has drastically cut resources and threatened the viability of communities. These realities are coupled with a shift in economic patterns away from the farming and ranching traditions of the region and towards new employment sectors, including tourism, energy, and transportation. This motif of change marks the region as a whole, providing stressors as well as opportunities for growth in new directions.

In this context, digital literacy training has great potential for positive impact on economic development. Planning groups, such as NEEDO and other regional and community organizations, recognize the importance of training and broadband skills for developing a skilled workforce, attracting outside companies, building local small businesses, and drawing both tourists and talented professionals to the region.[33] Planning offers the opportunity for the NEEDO region to move forward with digital literacy by including it in a network of strategies that meet larger economic goals for the region.

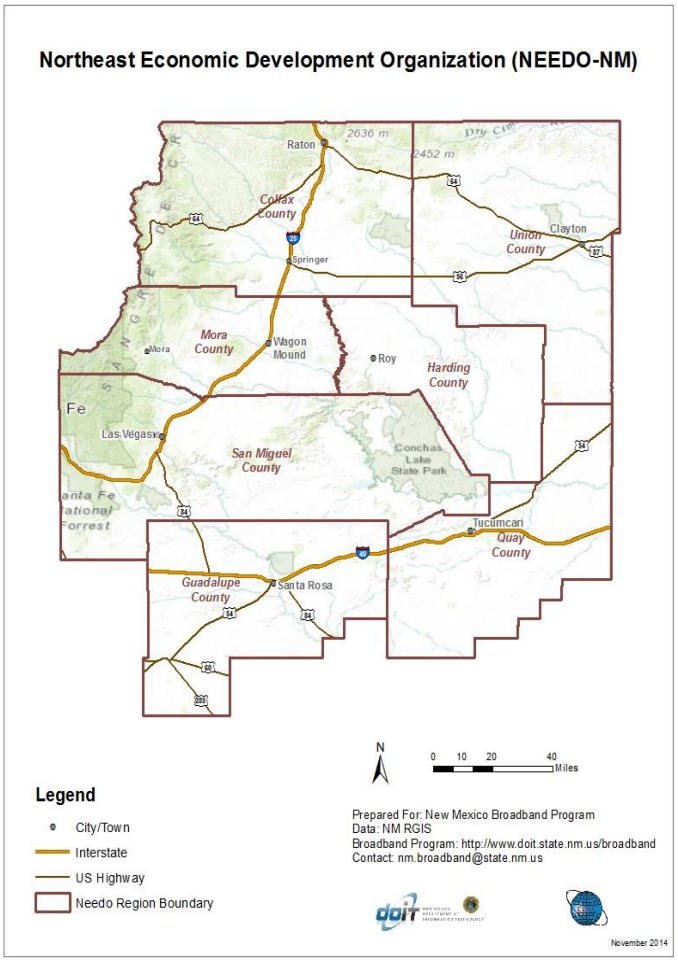


Figure 7: NEEDO Counties

Opportunities and Resources

While few entities in the areas are currently able to offer free digital skills training, many opportunities exist within the landscape of digital resources in the northeast.

Higher Education Institutions and Satellite Campuses Including ABE Programs

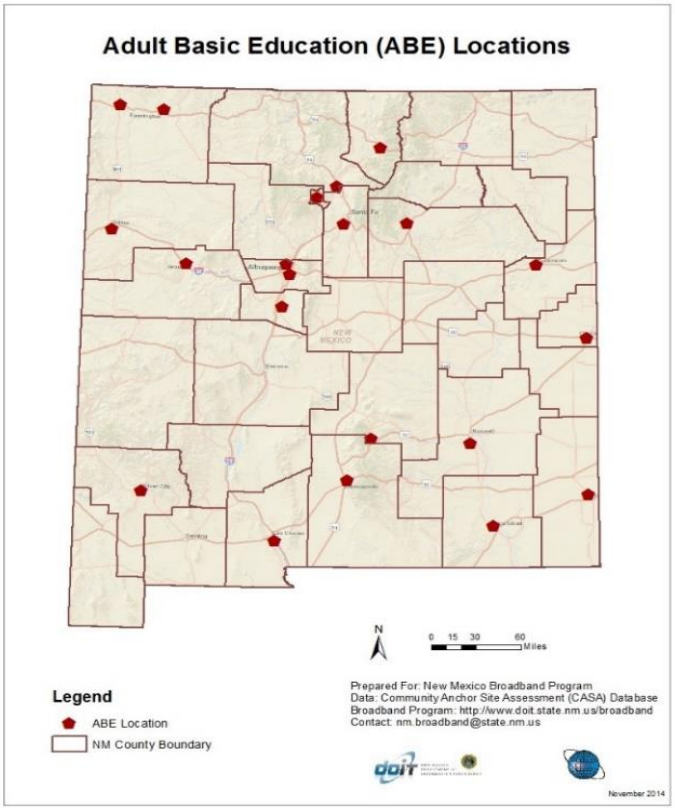
These institutions and their associated ABE/Basic Adult Education (BAE) programs provide an extended web of opportunity and support, both within the NEEDO region and the state. ABE campus facilities offer the equipment and expertise from which to effectively deliver digital literacy instruction. The colleges also offer introductory classes in computer and Internet skills, but these courses require students to register and pay tuition, factors that deter attendance by anyone not seeking a degree.[34] The state funded ABE programs provide instruction in basic educational skills (math and English) at no cost to the learner and offer great opportunity to provide free digital literacy instruction. At present, few ABE programs offer such training beyond what is needed to take the GED, which is now given online.

SBDCs and Satellites

Funded by state grant dollars, the SBDCs provide a similar resource and opportunity for providing digital literacy training. Currently, they offer consulting and instruction in business skills to small businesses from 20 sites and satellites across the state at no or low cost. Like the ABE centers, the SBDCs provide an opportunity for building a network of training in the NEEDO region.

Local Public Libraries

Libraries are another potential resource and opportunity for digital skills training in the NEEDO region. On the national level, libraries and their affiliate organizations, such as the Institute for Museum and Library Sciences (IMLS), have provided leadership and resources for training in computer and Internet skills, including information literacy. With



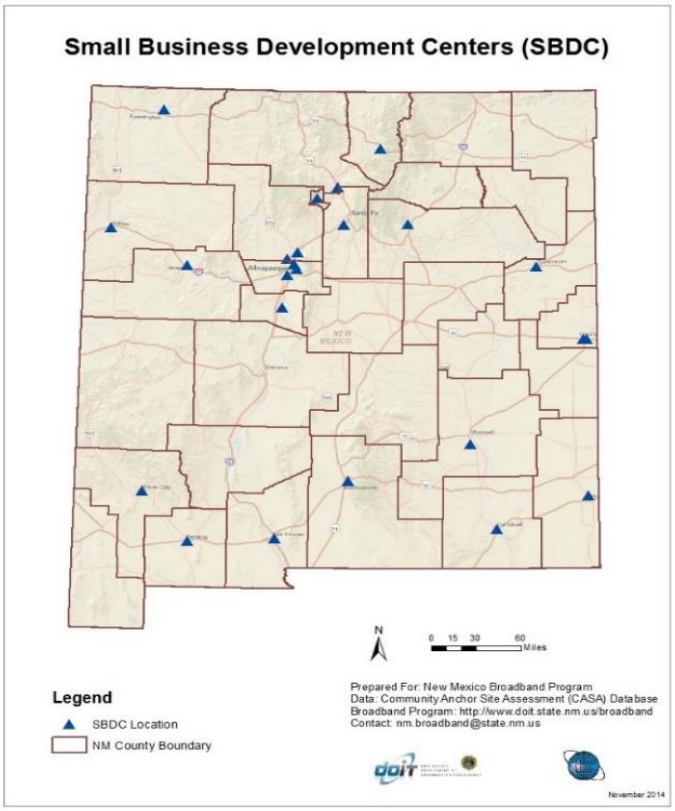


Figure 8: Maps of ABE and SBDC Programs in the State

multiple locations and free public access computers, many libraries already function as the key community resource for Internet access and technical education.

Barriers

While opportunities for developing digital literacy education in the area are plentiful, barriers to their development also exist.

Dedicated Funding

In general, the greatest barrier to digital skills training across the state is the lack of dedicated funding. This currently hampers the ability of most libraries in the NEEDO region to deliver computer training classes despite the local demand. Small spaces, low staffing, and a lack of dedicated equipment are additional obstacles in most of the libraries in the seven-county region.[35] For ABE and SBDC programs, lack of funding is coupled with lack of targeted directive on the state-level to redirect a portion of their efforts to these skills.

Outreach, Centralization, and Coordination

Other barriers to computer skills training do exist. Commonly, those providing instruction are not experienced in outreach and marketing and are challenged to build adequate awareness and interest in the classes they offer. Absence of centralized resources and coordination of effort can also limit the capacity to deliver successful digital skills programs. Providing leadership, fostering community engagement, training instructors in outreach skills, and establishing tools for coordination would enable the NEEDO region to address these barriers.

The opportunities and barriers that the NEEDO region faces are not unique. Advance planning gives NEEDO the occasion to act strategically to integrate digital skills training into the region, leveraging existing resources, addressing challenges with foresight, and creating realistic goals.

Northwest New Mexico Council of Governments

The northwest region presents a different profile than the northeast, though the two areas share some general characteristics. Served by the Northwest New Mexico Council of Governments and comprised of Cibola, McKinley, and San Juan counties and adjacent municipalities, this area boasts a higher population than the other regions, with pockets of relative population density in the Four Corners region and along the I-40 corridor between Gallup and Grants. These pockets of higher population provide a wider array of resources that increase opportunities for computer skills training in the region. The northwest also faces some unique challenges, some of which are created by the overlapping cultural and demographic features of native and non-native communities that bifurcate the region along lines of language, practice, and community structure. These divisions also offer new opportunities for addressing digital literacy training needs and considering training solutions unique for the community.

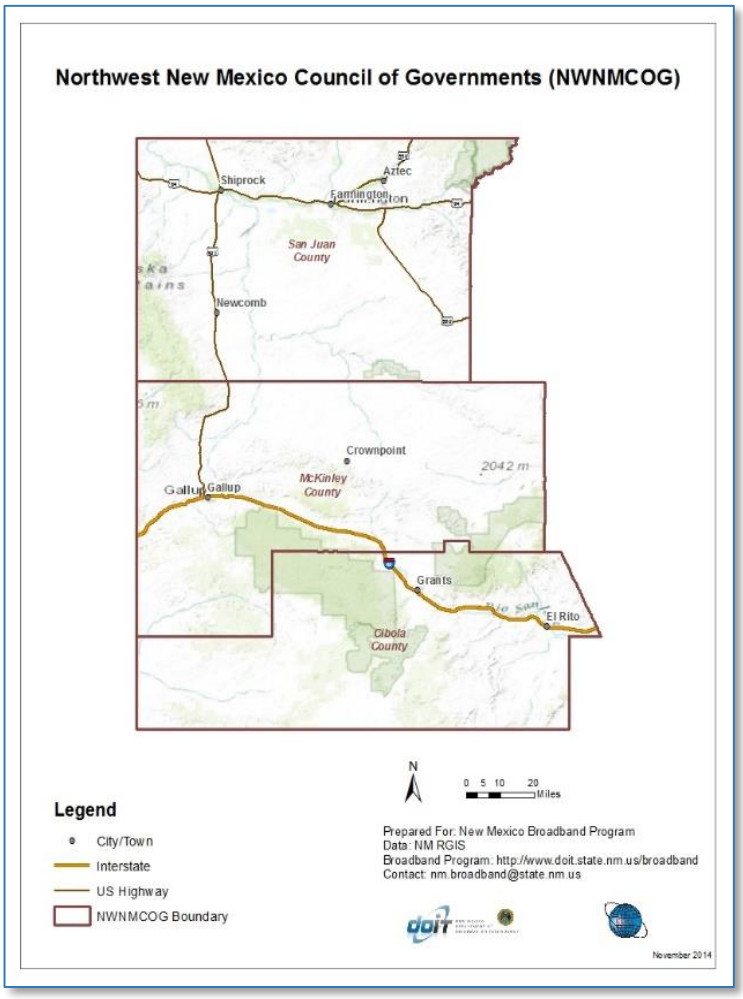


Figure 9: Region Served by the Northwest Council of Governments

Opportunities

Higher Education Institutions

Other opportunities for free training in computer skills exist through an innovative program run by the New Mexico State University (NMSU) branch campus in Grants. Through five outreach centers, managed in partnership with local tribal populations and schools, NMSU Grants provides regional computer labs and free digital skills training in Acoma, Laguna, Ramah, Thoreau, and To'hajiilee pueblo centers.[36] Here, local leadership and innovative, creative solutions for targeted audiences have created pockets of success in digital literacy education. The centers also provide ABE programming and GED prep classes.

NASNTI Grant Centers

Acoma	Laguna	Pine Hill/Ramah	Thoreau	To'hajiilee
Computer Outreach Acoma Page	**Partnership** Laguna Page	**Partnership** Pine Hill/Ramah Page	**Partnership** Thoreau Page	**Computer Outreach** To'hajiilee Page
Rachelle Simpson Adult Education Instructor (505) 552-5135 **Ergil Vallo, Jr.** Professional Tutor	**Johanna Wade** Coordinator, Partners For Success Laguna Dept. of Education (505) 552-9322	**Margaret Merrill** Executive Director Oso Vista Ranch Project (505) 414-8882	**Priscilla Manuelito** Community Center Coordinator (505) 862-7590	**Jordan Etcitty** Professional Tutor (505) 908-2733
• Adult Education/GED • Workforce Development • Computer Literacy • Online Learning, PLATO • Tutoring, Advisement • Dual Credit	• Adult Education/GED • Workforce Development • Computer Literacy • Online Learning, PLATO • Education Courses • Advisement • Dual Credit	• Computer Literacy • Online Learning, PLATO • Advisement • Dual Credit	• Adult Education/GED • Workforce Development • Computer Literacy • Online Learning, PLATO • Advisement • Dual Credit	• Adult Education/GED • Workforce Development • Computer Literacy • Online Learning, PLATO • Tutoring, Advisement • Dual Credit

Figure 10: NMSU-Grants Outreach Centers[37]

Business Partnerships

Through the Council of Governments, in partnership with Tohatchi Area of Opportunity & Service, Inc., (TAOS), the community received in 2013 a $29,000 sub-grant from New Mexico Community Capital under a larger W.K. Kellogg Foundation/Tides Foundation grant. The grant was used to establish the Rural Microenterprise Incubator Project at the Sheep Springs Welcome Center. The project provides basic instruction in business digital skills to native entrepreneurs with small businesses.[38]

Local Public Libraries

As in other regions, the public libraries in the northwest region provide an opportunity for offering digital skills training. In the northwest region, the libraries in both Gallup and Farmington provide regular free training classes in computer skills and have either dedicated trainers, a technically knowledgeable staff, or both. In Gallup, the library director has re-classified positions to include a technical trainer. This has allowed Gallup to become a leader in the delivery of computer training in the region. The library in Farmington also offers regularly scheduled training classes that include training in newer social media applications such as Pinterest.

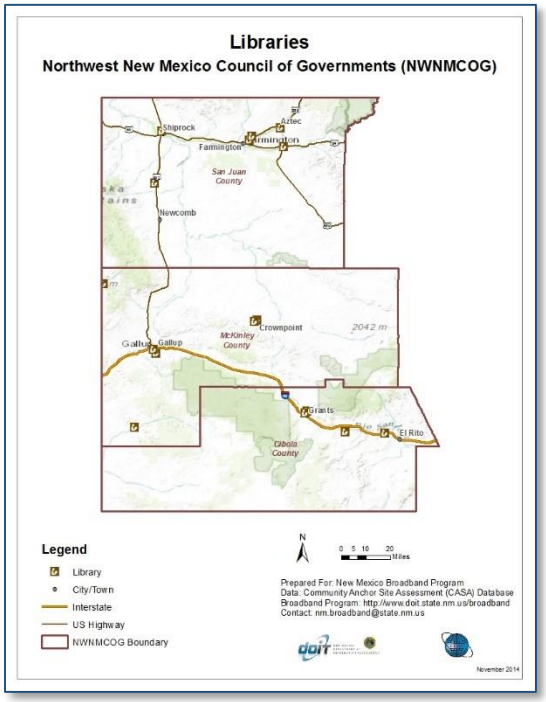


Figure 11: Libraries in the Northwest New Mexico Council of Governments Region

Other Opportunities

The health care networks on native lands are small, decentralized hubs from which health information is distributed. Currently staffed by native area health agencies, these decentralized, communication-based networks suggest a model for delivering training in digital skills that is similarly decentralized and communication based. Mobile technologies could be added to this network to provide a communication system that aligns with the decentralized, personalized culture of the population. Combining health and digital skills training could in turn provide new tools for health education, enhancing opportunities for health care while building digital skills.

Barriers

As in the NEEDO region, the greatest barrier to digital literacy training in the northwest region is the lack of dedicated funding for training. Some institutions have overcome these restrictions through the application of grant dollars and partnership opportunities. As in the northeast, resources are limited, and this scarcity curtails education and training options.

Southwest New Mexico Council of Governments

The southwest region consists of four counties, nine municipalities, three school districts, four special districts, and one Head Start.[39] Like much of New Mexico, the area is one of vast spaces and great beauty, rich in natural resources and a defining mix of cultures. Despite these features, most residents experience the harsh realities of an existence characterized by high poverty rates, low educational attainment levels, and the low-density population spreads of rural regions. Yet despite these typical patterns of deprivation, digital literacy education in the southwest region has grown in recent years. Through strong local leadership, community partnership, the ability to harness existing resources, and funding opportunities provided by local industry, the region has created several opportunities for digital literacy training.

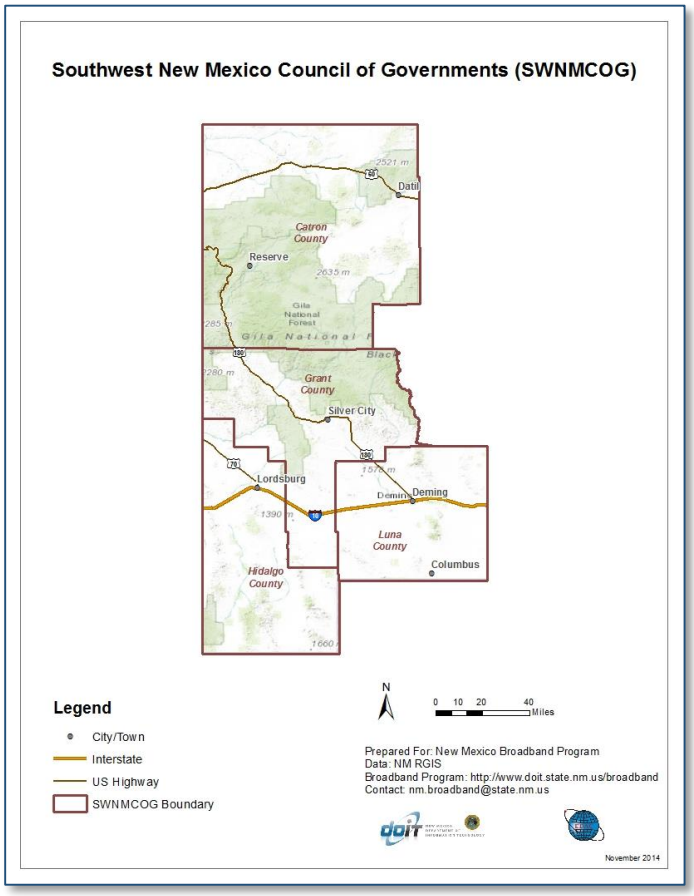


Figure 12: Region Served by the Southwest New Mexico Council of Governments

Opportunities

Higher Education

Western New Mexico University is a dynamic institution. Through its Adult Education Services (AES) program, it has taken a leadership role in digital skills training throughout the region. Classes in digital skills are provided on the Western campus in Silver City as well as through outreach learning centers in Lordsburg and Deming. Efforts to extend these programs and to include more classes taught in Spanish are ongoing. Western's AES program has also been a strong partner in the Silver City library grant project.

SBDCs and Business Communities

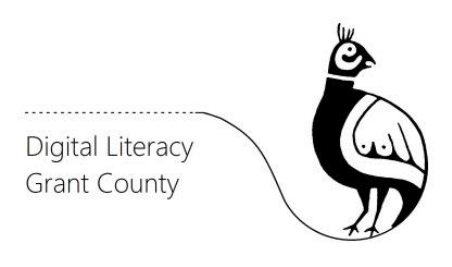
As in other communities, the need for digital skills to drive and enhance regional business is high. With branches in Silver City, Deming, and Lordsburg, the SBDCs provide a strong potential network. Opportunity is also provided by the strong Arts and Cultural Districts in these regions, the many MainStreet initiatives in downtown communities, and the many state and national parks in the region.

Local Public Library

In Silver City, leadership for digital literacy has been especially strong and the library has led that effort. Through a partnership application for grant funds from local industry, the library has coordinated individuals and resources to share in providing a series of trainings in digital skills. The integration of individual and institutional leadership has established a strong culture of support and led to successful and effective programming. This community partnership has enabled the use of existing resources to maximum efficiency. Collaboration has also allowed multiple voices to be heard, creating a rich variety of perspectives and greater opportunity for exploring alternative training solutions, such as a mobile training unit to serve remote communities. The Silver City effort provides a model for other regions in the development of partnerships that are effective and training solutions that are flexible and adaptable to local needs. Libraries in Deming and Columbus also provide training in digital skills through partnership and initiatives.

Silver City Library
Digital Skills for Sustainable Grant County

Project:	Digital Literacy Training
Grant funder:	Freeport-McMoRan Community Investment Fund
Grant amount:	$15,000
Time frame:	Mar 2014–Mar 2015
Leadership:	Silver City Public Library, in partnership with ABE (WNMU), SWNMCOG, Silver City SBDC, Workforce Solutions, Literacy Link Leamos, Bayard Public Library, Silver City Arts and Cultural District
Goals:	Increase community opportunity and sustainability through training



Barriers

The greatest barrier to offering training remains a lack of dedicated funding for instruction. Even with grant resources, the Silver City library noted the large effort entailed in setting up and promoting trainings.[40] Without technical trainers, IT staff, or external support, these tasks can easily overwhelm even an institution that is well organized and has talented staff. Efforts in the Silver City region underscore the need for supporting communities in coordination of effort, centralization of resources, outreach efforts, and technical assistance. Smaller communities face the additional challenges of lower resources on all fronts, making training impossible to provide.

Summary Findings

The three regions engaged for the Digital Literacy Regional Pilot Program each presented different profiles and different needs, yet together they reflected similar patterns of challenges and solutions. These patterns, listed below, are important to consider in future efforts to provide digital literacy in the state.

1. **Most communities lack adequate resources for providing digital literacy training**.

   The greatest needs are

   - Lack of funding for dedicated computer skills trainers;
   - Limited expertise, both of the technology and of the techniques of instruction needed to provide training;
   - Unavailability of adequate technical support to manage training equipment.

   While funds for equipment were also scarce, most communities felt that it was easier to find funding assistance for technology than for personnel. Those areas that have found temporary solutions to this dearth of assets lack the ability to create a systemic and sustainable effort.

2. **Leadership and partnership are essential elements of successful digital training programs**.

   Leadership contributes the vision and direction for the program; partnership provides the resources that allow the program to meet needs, be adaptable, and create innovative solutions.

3. **Existing institutionalized programs have established networks, expertise, and resources**.

   These programs would provide excellent resources for developing digital literacy training programs. Entities such as ABE, the SBDCs, and libraries frame a triad of potential partnership. Working with leadership to assess institutional missions, explore curriculum options, and provide instructor training to include digital literacy training would allow these program to fill training gaps without adding resources.

4. **Rural communities with low population densities require unique training solutions**.

   These circumstances make the traditional centralized models of training inefficient and impractical. More effective strategies would utilize decentralized or mobile models, delivering training to communities on site.

5. **Specific target populations are in particular need of training and require focused resources**.

   Some of the groups with the greatest unmet need are Spanish-speaking audiences, tribal groups, and seniors. Developing targeted resources for these groups and delivering training to them on site would help communities provide a more far-reaching digital literacy education program.

6. **New Mexico is diverse and training must mirror this diversity**.

   Training will be most effective if it does not attempt to build a "one size fits all" model, but adopts a model that is flexible and can be adapted to each region. These training solutions will be most likely to succeed, as they will tailor training to the local audience and take advantage of the unique ecology of resources that each community offers.

7. **Most New Mexicans understand the importance of mastering computer and Internet skills.**

   While some doubt the value of learning digital skills, most New Mexicans recognize that they need these skills to participate in basic life tasks. This is especially true of community leaders, economic development teams, educators, and others on the forefront of regional growth, but it also describes the general population, many of whom struggle with filing unemployment or completing online job applications on a daily basis. Few felt that the Internet was "irrelevant" to their lives or their future.[41]

8. **Classes offered for credit through institutions of higher education do not meet training needs.**

   Training provided for credit by two- or four-year colleges that require students to enroll and pay tuition are not successful in meeting the needs of the population seeking basic computer and Internet skills training. Complicated application processes, high costs, extended class schedules, and university locations deter those with low skill levels, low incomes, and low educational achievement. Communities must seek alternative options for providing free digital skills training in order to reach the audiences most in need of these skills.

Chapter 5: Digital Literacy and Broadband Adoption

Analysis

Digital literacy refers to the basic skills needed to use information technology tools and resources to find, use, and create information.[42] Once seen as a set of limited skills and uses, digital literacy is now seen to comprise a widening range of knowledge and capabilities that are necessary for carrying out the daily tasks of our personal and professional lives. "Digital literacy" may now refer to skills as narrow as the ability to use one or two basic software applications or to those as broad as the capacity to build a business in an online environment. Digital literacy also encompasses a range of other literacies—media literacy, financial literacy, and information literacy all require and are part of digital literacy.

Despite this upgrade in definition, digital literacy is still an important aspect of broadband adoption and sustained use. Interest in subscribing to broadband service is closely linked to an appreciation of what that service can provide. Increased options for education, health, and employment are attractive but only accessible to those who have the skills needed to access and utilize these resources and opportunities. Online commerce, social media, and participation in e-government will only be perceived as valuable and exciting to those with the knowledge and skills to practice these interactions safely and with confidence. Digital literacy allows individuals to engage with the opportunities broadband provides, increasing the likelihood of sustained broadband use and adoption.

In 2013, the New Mexico Bureau for Business and Economic Research (BBER) department of the University of New Mexico completed a report on Broadband Subscription and Internet Use in New Mexico.[43] The report, developed as part of the New Mexico Broadband Program, sought to measure and describe broadband adoption and use patterns in the state. Based on an extensive survey and series of follow-up phone interviews, the report uncovered a pattern of adoption similar to that reported by "the US Census Bureau's Current Population Survey (CPS)."[44] According to the BBER report, 55.9% of New Mexicans are broadband adopters with access to broadband in their home. Other report data further reinforces national patterns, showing lower adoption rates in low income, rural, and Hispanic households.

While the report does not claim to directly address the role or impact of digital literacy on broadband, it does ask several questions related to digital capabilities and makes suggestions based on this information. The report notes that:

- When asked why they do not have subscriptions for broadband at home, lack of knowledge and skills was given as a reason 50% of time.[45] The report interprets this within the context of a larger pattern of lack of "interest and ability"[46] that guides non-adoption.
- Like adoption itself, digital literacy depends on larger factors, such as income, education, and age. In relation to income, the report tells us that, in New Mexico, digital skills tend to decrease as income drops: "only 68% of respondents with incomes less than $15,000" claimed they knew how to use the Internet.[47]

- The report also notes that those over 65 and those identifying as Hispanic are less likely to have home broadband, trends that also exist in nationwide patterns.

The New Mexico Broadband Subscription and Internet Use Survey findings also echo national information about Internet use and adoption reported by the PEW research center and the NTIA.[48] These figures tell us that low income, low educational achievement levels, and Hispanic and rural households are all less likely to have home broadband subscriptions. Of all sectors, seniors remain the least likely to use the Internet, with use rates increasing but still over 25 percentage points below that of the general population.[49] Table 4 outlines the PEW demographics.

Table 4: Demographics of Broadband Internet Users

Demographics of broadband internet users

% of all adults who use high-speed internet at home

		Broadband internet users
	All adults (n=6,010)	70%
a	**Men** (n=2,733)	70
b	**Women** (n=3,277)	70
a	**White, Non-Hispanic** (n=4,223)	74[bc]
b	**Black, Non-Hispanic** (n=664)	62
c	**Hispanic** (n=682)	56
a	**18-29** (n=945)	81[bcd]
b	**30-49** (n=1,590)	77[cd]
c	**50-64** (n=1,842)	68[d]
d	**65+** (n=1,526)	47
a	**No high school diploma** (n=454)	28
b	**High school grad** (n=1,667)	58[a]
c	**Some college** (n=1,627)	80[ab]
d	**College+** (n=2,225)	90[abc]
a	**Less than $30,000/yr** (n=1,682)	52
b	**$30,000-$49,999** (n=1,030)	71[a]
c	**$50,000-$74,999** (n=787)	85[ab]
d	**$75,000+** (n=1,644)	91[abc]
a	**Urban** (n=1,850)	70[c]
b	**Suburban** (n=2,980)	74[ac]
c	**Rural** (n=1,180)	60

Pew Research Center's Internet Project survey, July 18 – September 30, 2013.
Note: Percentages marked with a superscript letter (e.g., [a]) indicate a statistically significant difference between that row and the row designated by that superscript letter, among categories of each demographic characteristic (e.g., age).

PEW RESEARCH CENTER

Recent PEW studies add to the picture of the role of digital skills in broadband adoption. A 2013 study cites "usability problems," or the ***in***ability to use a computer or the Internet, as one of several factors deterring individuals from subscribing to broadband.

- In a 2013 survey of adult non-Internet users done by PEW, 32% of the respondents gave "usability" as a reason for not engaging with the Internet.[50]
- Usability included several factors beyond "don't know how," and "too difficult or frustrating," such as worry and concern about the online security threats of hacking and phishing.[51]
- The PEW study also lists "relevance" as the reason for not going online by 34% of the respondents. [52]

The BBER report echoed the observation that relevance impacted broadband adoption in New Mexico, noting that "For many not online, the Internet has little perceived value and is irrelevant to their lives."[53,54]

We can understand the changing importance of "skills" and "relevance" as factors in the use of digital technology by exploring the PEW survey more closely.

- **Over time, "usability" became increasingly significant in the use of digital technology, with a lack of knowledge and skills more than doubling as a deterring factor.[55]**

  In 2007, 15% responded that they chose not to use the Internet because of "usability"—they either didn't know how, did not have adequate knowledge (were afraid of hacking, etc.), or had difficulty (knowledge or physical barriers) doing so. By 2013, 32% chose this reason for being offline.

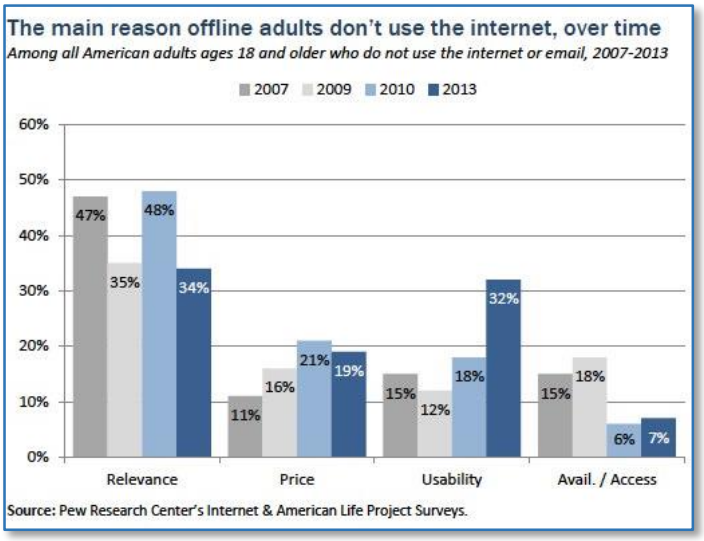


Figure 13: Reasons Adults Are Offline[56]

- **During the same period, "relevane" declined as a reason for non-use of digital technology, decreasing by over 25%.**

  In 2010, 48% cited "relevance" as a reason for not using digital technology; by 2013, the percentage had fallen to 34%.

Over the past five years, lack of abilities has increased as a reason for why people do not use technology. While some people still respond by stating that digital technology is not relevant for their lives, the percentage that make this claim is declining rapidly. Digital literacy skills have an increasingly important role in determining broadband use adoption.[57]

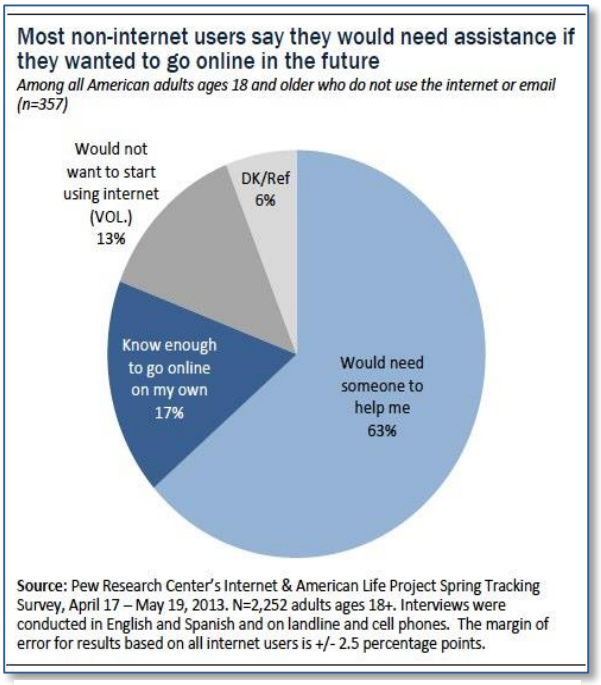


Figure 14: Internet Users Who Would Need Assistance To Go Online.

Perhaps most interesting is the fact that, of those who are non-users, only a small percentage acknowledged that they "would be able to start using the Internet on their own."[58] As many as 63% said that they would require help in order to get online and use the Internet. This tells us that the majority of those who are non-users also have low or no skills and suggests that training might lead to use and adoption.

As the BBER report notes, "The causality here is not clear but the message is – those with home internet access know how to use the internet…; those without home access are much less likely to know how to use it…."[59] It seems likely, however, given the pattern of correlations between digital literacy and adoption, that increasing digital skills within this sector of the population is likely to impact home broadband adoption and use.

Summary Findings

Overall, the New Mexico Broadband Subscription and Internet Use, together with recent data from national agencies and think tanks, provide several insights into the role of digital literacy in broadband adoption.

1. **The correlation between digital capability and broadband adoption is high; increasing digital skills is likely to increase adoption.**

   Data from all sources show the ongoing and strong correlation between digital literacy and broadband adoption. Digital literacy also correlates with other factors that impact both adoption, such as low economic and educational levels, rural locations, and older age brackets. As the New Mexico Broadband Subscription Survey notes, the causality of these factors is not clear, but the correlation shows that those who have the knowledge and skills to use a computer are more likely to become adopters. This suggests that providing digital literacy training to non-adopters could significantly raise broadband adoption numbers.

2. **Digital literacy has become increasingly significant in adoption**.

   Data from the period between 2007 and 2013 show an increase of over 100% in those identifying "usability" as a reason for non-adoption. The importance of digital literacy as a barrier to adoption is growing, creating greater incentives for raising digital skills.

3. **Lower rates of both adoption and skills occur in specific populations, including seniors, Hispanic households, and those in low-income and low-educational brackets. This poses challenges for New Mexico.**

   Broadband adoption studies repeatedly show lower take rates in populations of older adults, rural residents, and those with low income and educational achievement levels. Digital literacy skills follow a similar demographic pattern. These populations make up a large percentage of New Mexicans. Targeted trainings for these sectors would have multiple benefits by simultaneously and positively impacting factors affecting education, health, and employment,.

Chapter 6: Summary and Lessons Learned

Digital Literacy in New Mexico

Need for Skills

The information, research, pilot programs, and reports reviewed have all highlighted the importance of digital skills and showcased the need for these capabilities in our personal, professional, and community development. The scope of this need in New Mexico becomes more apparent when we examine closely the types of skills currently used in various sectors of the community and by state agencies. This information is summarized in Tables 5 and 6. Table 5 shows the skills needed by various sectors and the specific purposes for which those skills are needed. Table 6 lists the digital abilities needed by the public for performing various tasks within the agencies. The tables make clear the high level of digital skills needed for all levels of community and state agency activities in New Mexico.

Table 5: Digital Skills Needed by Community Sector

Sector	Digital Skills Needed
Health	Health and media literacy for access to information, care, and records; online communications and forms for consultations, prescriptions, insurance
Agriculture	Media literacy for weather, water and crop information; online and social media marketing for value-added products
Business	Online presence and marketing tools, including website development/maintenance, online and social media marketing and tools
Economic Development	Basic digital skills for workforce training; business digital skills for small business development; high level skills for film and emerging media
Education	Media literacy for research, online security for safe practices, basic skills for workforce training, online learning skills for distance education, GED/ESL test, high school credit recovery, higher education applications, financial aid applications
Finance and Banking	Basic skills and online security for safe banking, bill payment, online shopping; basic image and social media skills for online selling; applications skills for taxes
Seniors	Health literacy, media literacy, online security and safety
Energy	Basic and Geographic Information Systems (GIS) skills for information, mapping, documentation, and reporting

Table 6: New Mexico State Agencies Digital Skills-based Tasks and Training Provided

State Agencies	Agency Tasks Requiring Digital Skills	Training Provided
Human Services	Apply for health, child, food and income support and benefits	None
Social Security	Apply for social security, disability, and Medicaid	None
Workforce Solutions	Apply for unemployment; conduct job searches	Medium
Public Safety and Emergency	Access information; manage online communication; manage devices; follow online security practices	None
Health care	Access reliable information; schedule consultations; monitor vitals; manage prescriptions	None
Motor Vehicles	Register and renew; update address	None

Available Resources

Agency Training

The information in the third column of Table 6 tells us that training for digital skills is generally not provided by the agencies that require them. Only the Workforce Solutions offices regularly train clients to use the computers for completing tasks associated with unemployment, including filing for unemployment compensation, looking for jobs online, and completing and submitting online applications for employment.

Other Training Providers

Table 7 explores other community-based organizations that might provide free training in these necessary skills. Of the listed providers, only the libraries are offering frequent training in a broad range of skills. Only one other provider, Workforce Solutions offices, offers a degree of training above a "low" or "very low" amount. Thus we see that, in New Mexico, despite high levels of need and demand for these digital skills, little training in these tools is given outside of that offered by local libraries. Many agencies send clients who need assistance with computer level skills in order to complete tasks to the local library.[60]

Table 7: Existing Digital Skills Training Providers in New Mexico

Existing Providers	Current Digital Skills Training	Current Amount of Training	Limiting factors
Local Libraries	Basic skills and media literacy (including skills for human services, workforce, healthcare, and employment/ unemployment)	High; varies	Staff capacity Funding Staff expertise
ABE	Basic skills Preparation for online testing	Low; GED/ESL only	Federal mission Staff expertise
SBDCs	Business applications Online and social media marketing	Low; varies	Targeted leadership Staff expertise
Workforce Solutions	Online job search and application; unemployment	Low-medium; varies	Interpretation of mission Targeted leadership Staff expertise
Literacy Groups	Basic skill and media literacy	Very low	Interpretation of mission Targeted leadership Staff expertise
Senior Centers	Basic skill and media literacy Health literacy	Low; varies	Interpretation of mission Targeted leadership Staff expertise
Tribal Centers	Basic skill and media literacy Business skills	Low; varies	Interpretation of mission Targeted leadership Staff expertise
Health Agencies	Health literacy	None known	Interpretation of mission Targeted leadership Staff expertise

Libraries are in a unique situation as they have absorbed a large proportion of the digital skills training needs, including those from other agencies. Currently, they provide training support for employment and job search skills, human services benefits, health information and prescriptions, senior needs, and online financial management. To continue to provide their current level of training support, libraries should receive additional funding which might include redistributed resources from those agencies whose efforts they support with this training, as well as increased state funding for libraries.

Barriers

Most of the organizations listed in Table 7 are aware of the need for providing training in computer skills. Furthermore, each organization is well equipped for training in several ways:

- each provides a well-developed institutional network,
- each employs a client service staff rich in specific content knowledge,
- each brings commitment to some form of educational or support service.

Based on these criteria, these institutions have a high potential to provide digital skills training and could help meet the digital skills learning needs of New Mexicans. Yet each is unable to do so due to specific barriers. The most common barriers to training they face are:

1. **Assessment of institutional mission**
   If the organization's mission does not appear to include training in digital skills, organizations will not be able to provide training using institutional funds without re-assessing their mission. External funding sources for an interim period would allow these organizations to provide training while missions are assessed.

2. **Lack of targeted leadership**
   Many organizations would be able to move toward providing training in digital skills if provided with targeted leadership for this effort. Targeted leadership can clarify missions and goals and direct budgets to clearly assign funding for digital skills training tasks.

3. **Need for staff training**
   Many staff lack sufficient skills with technology or with instruction to enable them to offer training in the use of digital tools. For staff to be able to train users, they would need to receive training in technical content and instructional skills.

These barriers create authentic obstacles to training by organizations that are otherwise strategically and operationally well-suited to offering education in digital skills. Developing short-term solutions that support transition to training for these organizations is addressed in Chapter 8, "Policy Recommendations."

Lessons Learned

The information in this report has shown that a variety of programs and strategies can be successful in delivering digital literacy education and training. Both statewide initiatives within economic development departments, such as that in Vermont, and agency-directed local programs, such as those in public libraries, have led to effective training solutions with measurably positive outcomes. Yet despite the variation in options, all successful digital literacy programs share common characteristics and key elements. These important features are summarized below in a list of "lessons learned." These lessons should be considered in building a sustainable digital literacy training program in New Mexico and should inform policy recommendations.

1. **Digital literacy is a necessary skill for economic development, education and health.**

   National and international research and information overwhelmingly concludes that the ability to develop successful economies, educational levels, and health in our communities depends on developing a digitally literate population. Digital skills will increasingly be required both for building and engaging educational, health, and economic opportunities. If New Mexico fails to help its citizens develop digital technology capability, it will fall rapidly behind in measures of the economic, educational, and medical health.

2. **Digital literacy training is best effected through a dedicated statewide program.**

   Dedicated statewide programs reflect commitment, promote uniform and continuous practices, and reach out to all sectors of the population. By eliminating redundancy, centralizing resources, standardizing best practices, and implementing diverse and regionally appropriate training, dedicated programs have the widest and most effective impact. Dedicated state-level programs are most likely to be successful and sustained.

3. **Digital literacy programs require committed leadership on the state and local level.**

   Successful digital literacy training programs have strong and committed leadership on the state and local level. State-level leadership provides partnership opportunity and commitment; local leadership provides implementation strategies, community engagement, and the capacity to leverage state directed initiatives and partnerships.

4. **Partnerships on the state and local level are essential for successful digital training programs.**

   State-level partnerships are essential for making resource networks available on the local level and providing incentive. Collaborative efforts on the local level allow training programs to pool expertise and resources, implement best practices, coordinate efforts, and develop innovative and regionally appropriate training solutions.

5. **Distribution and decentralization of training provides sustainability.**

   For communities to retain digital literacy skills, training must be deployed on a local level. Sustainable programs identify local champions and develop local expertise through train-the-trainer programs. These programs also create investment in communities and build capacity at the regional level.

6. **Digital literacy training must be accessible and appropriate for a range of audiences.**

   Successful digital literacy training programs provide classes that are easily available and relevant to all audiences. Use of multiple training sites, relevant content, diversity in language, and mobile training units are all elements in creating more accessible training.

7. **Rural regions require unique training solutions.**

   Rural demographics require flexible and creative training models including the use of mobile computer training labs that can be shared amongst adjacent community clusters. Decentralized training models targeted in content to rural audiences provide training that meets the needs of more New Mexico communities.

8. **A strong online presence centralizes information, guides training programs, and promotes progress**.

   A strong online presence is a necessity for all successful and sustainable endeavors. For digital skills training programs, an online hub provides information, collects resources, showcases efforts, and acts as a vehicle for communication and outreach, eliminating redundant efforts and streamlining opportunity.

9. **Significant target populations require specialized training.**

   In New Mexico, seniors, Spanish speakers, and tribal members are just some of the groups for whom specific application training at local sites will encourage engagement and immediate use. Targeted training should consider differences in language, culture, and place, as well as content and skills.

10. **Digital literacy is an increasingly significant factor in broadband adoption.**

    Broadband adoption data and reports show that digital literacy is of growing importance as a determinant of broadband adoption. Internet service providers should be made aware of this impact and be encouraged to support and invest in digital literacy training.

11. **Funding and support for trainers is essential for successful, sustainable programming.**

    Digital skills have become a basic necessity and training in these skills must be fully accessible to all to ensure everyone is able to engage services and contribute to the community and the economy. To absorb the expense of this effort, funding and support for trainers should be provided, through dedicated funding, grants, partnerships, and private enterprise.

Chapter 7: Digital Literacy Funding Opportunities

There are few dedicated sources of direct funding for independent digital literacy education and training programs. Opportunities that existed several years ago through NTIA and BTOP grants have vanished from the funding landscape. In addition, digital literacy education continues to lack an institutional base of its own, making it difficult to apply for direct funding for programs through targeted institutional funds. Instead, most funding for training in digital skills exists as part of larger grant programs or broader organizational goals. Funding opportunities for digital literacy are thus best sought through grants and resources available to the specific institution to which digital literacy programming is linked. Primary providing institutions are most often libraries, and grants for these entities will or can often include money for digital literacy education. Additional funding opportunities may also be available if the target audience for training is an underserved group for which educational grant resources are available. A small selection of such potential funding sources is given below. Communities should consider funding options based on their unique location and demographic. They should also consider support available from state and local business and industry, as well as regional partnerships that combine resources to build viable programs.

Table 8: Funding Opportunities for Digital Literacy Training

Title	Description	Sector
Library Services and Technology Acts Awards (LSTA)	Administered by the Institute of Museum and Library Services as part of a larger state awards program, LSTA funds are provided to state libraries in order to support ongoing delivery of library services within the changing environment which information technology has created. States must meet broad LSTA guidelines within a flexible structure that allows individual states to set priorities and key goals that are in alignment with the guidelines. According to the description provided on the IMLS website, one key purpose of the program is to "promote literacy, education, and lifelong learning and to enhance and expand the services and resources provided by libraries, including those services and resources relating to workforce development, 21st century skills, and digital literacy skills."[61] In recent years, states have used these funds for a variety of programs related to digital literacy education, including targeted projects that provide digital and traditional literacy skills for children in schools, as well as equipment purchases, mobile computer labs, and training classes in basic and workforce skills for the community.	Local libraries in New Mexico; tribal libraries
Institute of Museum and Library Services (IMLS)	In addition to LSTA funds, the IMLS offers a range of grant and funding opportunities to libraries, some of which include support for digital literacy. Most grants are directed to target institutions, such as Native American libraries. Funds are largely dedicated to libraries and museums, but some grants are available for other institutional entities including higher education and state and local governments. IMLS grants provide good opportunities for communities in which local culture or regional programming aligns with specific IMLS programs. To view a complete list of available grants, go to: http://www.imls.gov/applicants/available_grants.aspx	Libraries; some tribal and government agencies such as historical societies

Department of Education Innovative Approaches to Literacy Program	The program began in 2012 and replaced the previous U.S. Department of Education (DOE) Literacy through School Libraries (LSL) award, last funded in 2009. The program provides funds to high-need local educational agencies (LEAs), LEA consortia, national non-profits (NNPs) and NNP consortia, with preference to rural LEAs and to the use of technology in improving literacy achievement levels. Funding was at $24 million for 2014 and is projected at $25 million for 2015, with average awards of $500,000 for LEAs or LEA consortia and $4.5 million to NNPs or NNP consortia. A minimum of half of all funds are dedicated to awards for high-need LEAs. Eligibility criteria include the requirement that applicants must "Coordinate with school libraries in developing project proposals." 2012 applicants were predominantly schools and school districts, and applications addressed the need to improve school library resources (print and digital) as well as a need for mobile facilities from the local public library. http://www.gpo.gov/fdsys/pkg/FR-2014-06-17/pdf/2014-14050.pdf	High-need LEAs and consortia; NNPs and consortia; school libraries are often included in grant proposals; technology favored in awards
Title III and Title V Education Grants	Run by the U. S. DOE, Title III and Title V grants provide funding for the support, improvement, and expansion of opportunities for low-income, Hispanic, and Native American students at appropriate institutions of higher education. These grants offer resources for building programs that may include digital literacy education and resources, and were the source of funding for the five NMSU Grants Outreach Centers in the northwestern region of New Mexico. These grants must be applied for by institutions of higher education and offer the opportunity for digital literacy training to be built in partnership with these institutions. For more information about these grant opportunities, see http://www2.ed.gov/programs/idueshsi/index.html and http://www2.ed.gov/programs/iduestitle3a/index.html.	Institutions of higher education, including two- and four-year colleges; branch campuses; partnerships and consortiums that include leadership from higher education institutions.
Free and low-cost computers for programs	There are several programs for acquiring free or low-cost computers for individuals or programs. Some are offered by large technology companies, such as Dell, which provides low-cost equipment, and Microsoft, which supplies free software to non-profits and offers a "localized grant program that focuses on educating underserved communities to use basic computing skills to advance their economic well-being, including getting a job and starting a business." Microsoft also provides access to low-cost refurbished computers in partnerships with other agencies and programs. In general, larger companies work with larger programs or partner with existing grant-funded projects. Other organizations, such as ComputerswithCauses.org and Digital Wish, provide computer equipment to classrooms, teachers, and schools. Interconnections.org is a Washington-based company that offers low-cost equipment to low income and non-profits. http://www.dell.com/learn/us/en/uscorp1/power-possible-learning?c=us&l=en&s=corp&cs=uscorp1 http://www.microsoft.com/about/corporatecitizenship/en-us/nonprofits/ http://www.microsoft.com/about/corporatecitizenship/en-us/nonprofits/faq/#cash http://www.computerswithcauses.org/computer-donation-contact.htm http://www.digitalwish.com/dw/digitalwish/about http://interconnection.org/store/	Non-profits, sometimes restricted to those that are considered charities; schools and classroom teachers

Free and low-cost computers for individuals	Other companies provide access to low- or no-cost refurbished computers for individuals. Often this equipment is linked to package offers that bundle the equipment with low-cost broadband subscriptions rates. Typically, equipment is available to households with children on reduced or free lunch programs. Connect to Compete, now EveryoneOn.org, is one such program, which provides low-cost equipment through Right2PC. While there are good opportunities for getting low-cost or free computers, it is best to vet sources carefully before applying or purchasing. http://right2pc.com/en/overview	Individuals and families with children qualifying for eligibility through free- or low-cost lunch program at public schools
USDA Rural Development Business and Cooperative Assistance	"The RBEG program provides grants for rural projects that finance and facilitate development of small and emerging rural businesses help fund distance learning networks, and help fund employment related adult education programs." Smaller projects have priority and are likely to be funded in amounts ranging from $10 to $500 thousand. Rural non-profits and public entities, as well as tribes, are eligible for funding. "Examples of eligible fund use include: …training and technical assistance; distance adult learning for job training and advancement." Any project funded under the RBEG program should benefit small and emerging private businesses in rural areas." May be ideal for training programs in digital skills for small business and agencies within rural regions. http://www.rurdev.usda.gov/BCP_rbeg.html	Rural non-profits, rural public entities, and tribes.

Chapter 8: Policy Recommendations

Based on research and analysis of existing programs, training models from other states, and experience in the field as summarized in this report, we make the following recommendations for digital skills training in New Mexico:

1. **Invest in a statewide digital literacy training program to institutionalize digital skills training.** Digital skills are essential for the continued growth and economic viability of New Mexico. They are a necessary foundation for building workforce training and small business development, expanding employment opportunities, advancing educational levels, and providing access to health care information and agency services. To help New Mexico meet these goals successfully, the state should establish a program within the DoIT to support and expand current digital literacy training efforts and to institutionalize these efforts within existing appropriate organizations over the next 3–5 years. The program should be guided by the department, a committee of representative stakeholders, and a staff that includes expertise and knowledge in digital skills training programs, familiarity with New Mexico communities and needs, and skills in adult curriculum and learning.
    a) **Together with institutional and agency leaders, the program should develop and implement a stepped plan for integrating digital skills training into existing institutions.** Institutions to consider include but are not limited to ABE programs, Workforce Solutions programs, and SBDCs, as well as regional health care agencies, senior centers, tribal centers, literacy groups, and regional and statewide non-profits.
    b) **Program leaders should provide and deliver an aggressive train-the-trainer program**. This should be focused especially on library staff and staff of those institutions that will be integrating digital training into their existing programming. Training of trainers should also reach out to individuals, teachers, volunteers, interns, and others who may be interested in providing more informal or one-on-one digital skills training.
    c) **The program should maintain and expand the web portal for digital skills training.** The web portal should continue to act as a hub for shared expertise, training, and information and provide resources for communities, learners, educators, and stakeholders. The website should also document and showcase successful efforts and programs to support future grants and state economic development.
2. **Establish partnerships on the state and local level.**
    Successful programs in digital literacy training are built on partnerships. Partnerships are essential for maximizing opportunities, consolidating resources, and sharing the burdens of providing training. State-level partnerships must facilitate partnership on the local level through direction and communication between state and local entities. Partnerships also spread awareness of programming and build engagement in training.
    a) **Creating partnerships between participating training agencies is essential**. It allows coordination of efforts and ongoing assessment of best practices and program effectiveness. These partnerships will allow capacity building and enable sharing and distribution of resources, skills, knowledge, and audiences.

b) **Building partnerships across institutions and between public and private entities creates opportunities for funding and increases stakeholder investment.** These partnership opportunities should be sought out and pursued.

3. **Increase support for libraries.**

   Libraries have taken the lead in providing digital and computer skills. As neutral, open centers of information that also provide free use of public access computers, libraries are natural locations for those seeking computer skills. Library training should continue to be broad in scope, supporting target sectors such as the unemployed, seniors, and those seeking health information, as well as clients of state and government agencies. To support the cross-agency training they provide, libraries should be provided with additional funding dedicated to digital skills training.

   a) **Provide grant-in-aid funds dedicated to the support of digital skills training**. These funds should be distributed in amounts determined by a formula that is proportional to the number of hours logged on public access computers in each library. Funding should be at a level that could provide at least a half-time training effort.

   b) **Offer LSTA sub-grants for digital literacy training programs.** Sub-grants should be competitive and based on criteria that show demand for training and ability to deliver learning effectively.

   c) **Increase GO Bond apportionment amount to cover the cost of four mobile digital training units.** Funding should be adequate to provide for acquisition, maintenance, administration, and staffing hours needed to provide regular training for rural populations in these regions.

See **Appendix B** for more information about library funding sources in New Mexico.

4. **Develop resources for providing digital training equipment to in-need institutions**

   Lack of dedicated training equipment poses barriers for many small, rural, or under-served organizations that would otherwise be able to deliver training. Resources should be available for providing dedicated equipment during this transitional period in which training is being institutionalized. Small starter packages of laptops and projectors for qualifying programs would incentivize training, remove barriers, and jump-start digital skills training in many rural and high-poverty locations.

   a) **Create a temporary equipment fund within DoIT**. The state should commit temporary funding for small training equipment kits to be disbursed to qualified, under-served institutions that can meet specified program goals.

   b) **Refurbish state agency equipment for training programs.** In partnership with local non-profits and other groups, DoIT should establish a program for refurbishing state computer equipment and providing it to digital skills training programs.

   c) **Seek partnerships and grants for funding and donation of equipment.** Pursue funding and partnership opportunities to secure technical equipment for training, providing match in-kind as needed to meet grant requirements and incentivize investments.

   d) **Coordinate with local school and university internship programs.** Through state and local partnerships with educational institutions, establish IT internships for students to repair and refurbish computers and provide IT support for training equipment.

Appendix A: Abbreviations and Acronyms

Acronym	Definition
ABE	Adult Basic Education
AES	Adult Education Services
BAE	Basic Adult Education
BBER	New Mexico Bureau for Business and Economic Research
BBRI	Broadband Rhode Island
BTOP	Broadband Technology Opportunities Program
CPS	Current Population Survey
CSL	Colorado State Library
DL	distance learning
DLRPP	Digital Literacy Regional Pilot Project
DOE	U.S. Department of Education
DoIT	NM Department of Information Technology
FFNM	Fast Forward New Mexico
GO	General Obligation
IMLS	Institute of Museum and Library Services
LEA	local educational agencies
LSL	Literacy through School Libraries
LSTA	Library Services and Technology Acts
NEEDO	Northeast Economic Development Organization
NMBBP	New Mexico Broadband Program
NMSU	New Mexico State University
NNP	national non-profits
NTIA	National Telecommunications and Information Administration
NWNMCOG	Northwest New Mexico Council of Governments
PCC	Public Computer Center
RBIP	Regional Broadband Implementation Plan
RIDE	Rhode Island Department of Education
RIEDC	Rhode Island Economic Development Corporation
SBDC	Small Business Development Center
SWNMCOG	Southwest New Mexico Council of Governments
TAOS	To'hatchi Area of Opportunity & Service, Inc.
VCRD	???

Appendix B: Library Funding Sources

Federal Funding

IMLS controls federal funding for libraries through the LSTA within the Labor, Health and Human Services and Education Appropriations bill. The IMLS also distributes other dollars, which include some funding for specialty libraries and library programs, as well as for museums, through grant programs. For a complete list of IMLS grants and application information, go to: http://www.imls.gov/applicants/available_grants.aspx

LSTA funds are generally the only federal dollars libraries receive and are distributed from the IMLS to the state libraries. "State libraries use the funds to support statewide initiatives and also distribute the funds through sub-grants or cooperative agreements to public, school, academic, research, and special libraries. There is a requirement for a state match, which helps stimulate approximately three to four dollars for every federal dollar invested." http://www.ala.org/advocacy/advleg/federallegislation/lsta. Grants are awarded on a population-based formula. Since 2010, the NMSL has received approximately $1.5 million annually through LSTA funding.

In many states, as well as in New Mexico in previous years, LSTA funds are available for local libraries through sub-grant awards. In New Mexico, these sub-grants included awards for digital projects, technology support, and e-books. No sub-grants have been awarded or administered since 2011, and hence no state LSTA funds have been made directly available to public libraries.

The state library's Five Year Plan for 2013–2017 earmarks LSTA funds for a number of purposes and goals, including delivery of digital literacy classes and train-the-trainer programs. Regional libraries in New Mexico, including school libraries, interested in learning more about LSTA funds and digital literacy training should contact either Ryanne Cooper or Patricia Moore at the NMSL. http://www.nmstatelibrary.org/

State Funding

State Grants in Aid

Distributed by the NMSL, the State Grants in Aid provide small amounts of funding for a range of activities and purposes in local public libraries in the state, based on a per capita formula and the ability to meet specific requirements. Funding amounts are determined by the state legislature and vary each year. The purpose of the funding is to promote and assist libraries and developing libraries in providing collections, staffing, and services. Most libraries receive between $2,000 and $4,000 from these funds, with only the Albuquerque and Farmington libraries receiving over $5,000. Based on the 2005–2006 reports (the last year for which data are posted on the state library website), the total funding distributed for the year was $270,000. For more information about distributions for the 2008/2009 year, go to http://www.nmstatelibrary.org/services-for-nm-libraries/funding-libraries/state-aid .

GO Bonds

Voted on in the general election every two years, the GO bonds provide the basic state funding source for most public and tribal libraries. GO bonds for school libraries are handled separately through the Public Education Department.

GO Bonds are apportioned according to a formula based on per capita and service-area information for each library. For 2014, total GO Bond amounts requested were $3 million for non-tribal and $800,000 for tribal libraries. Because the library system allocation amount is different for non-tribal and tribal libraries, the non-tribal libraries generally receive smaller allocations. For this reason, tribal libraries with service area populations of under 1000 will have GO Bond allocations of over $40,000 compared to non-tribal libraries of that size, which would receive under $5,000 in GO Bond funds. Tribal libraries often lack other funding options such as city and county funding that are available to the non-tribal libraries.

Local Government Funding (City and County)

City and other local government entities (primarily county) are the largest sources of funding for most public libraries. These source vary with locale and depend on the financial resources of the community. Thus libraries in regions of higher poverty rates and lower tax base will provide fewer resources and services to their community. Some typical funding ratios are seen in the following examples for Alamogordo (Table 1) and Columbus (Table 2), communities with more and less local funding opportunities, respectively.

Table 1: Funding for Alamogordo Library—2013 Annual Report

Alamogordo	Amount	Percentage
City	$767,284	
County	$33,000	
Total Local Funds	$800,284	97.7%
State Grants-In-Aid	$5,672	
State Go Bonds	$12,883	
Total State	$18,555	2.3%
Total All Funding	$818,839	

Table 2: Funding for Columbus Library—2013 Annual Report

Columbus	Amount	Percentage
City	$18,553	
County	$10,000	
Total local funds	$28,553	
State Grants-in-Aid	$5,672	
State GO Bonds	$8,044	
Total state	$13,716	32.5%
Total all funding	$42,269	67.5%

Appendix C: Mobile Computer Lab Budget

Estimates for the expense of mobile training labs generally come in under $30,000, depending on the number and quality of the computers purchased, and on the type and standard for peripherals chosen. We recommend purchasing full service laptops and standard peripherals, as well as additional items that will allow for easy transport of equipment as well as for protection during travel. The following table provide a line budget for the key items required for a mobile computer lab.

Table 1: Line-Item Budget for Proposed Mobile Computer Lab

Item	Cost per Item	# Items	Total Cost
Surge protectors—for 6 plugs	$15/2 pack	3	$45
Extension cords—10', 3-prong	$13 each	6	$78
Gaffer tape—2" x 90'	$17 each	10	$170
Rolling carrying carts	$30 each	4	$120
Training laptops	$800	20	$16,000
Extended warranty/replacement coverage	$150	20	$3,000
Soft carrying cases	$25 each	20	$500
Wireless mice and mouse pads	$25	20	$500
Software (Microsoft Office and Adobe)	$250	20	$5,000
Projector	$500	1	$500
Projector screen	$130	1	$130
Printer	$150	1	$150
Initial set up and imaging, extra batteries, bulbs, wires	$1000		$1,000
Mobile wireless access points	Negotiable/TBA		
		TOTAL	**$27,193**

While some savings can be realized from purchasing refurbished computers, this is not recommended for training equipment. Learning is most effective when equipment works as efficiently as possible, with relatively few problems, and newer equipment equipped with the newest software is more likely to produce a smooth and seamless learning experience. Because some users of training equipment may be relatively inexperienced, the machines are often subjected to non-standard treatment that can be more taxing on systems. Newer equipment tends to be more resilient and able to handle this treatment more effectively. It is also an asset to work with training computers that are all identical in form and functionality. This similarity will make maintaining and updating the equipment more efficient and will also allow greater ease of instruction for basic skills classes, as user interfaces will present identically on all machines.

Refurbished computers are a good solution for providing low-cost equipment to those unable to afford a new computer but are not recommended for training purposes.

New laptops can generally be expected to last 3–5 years, depending on use and maintenance schedules. Benefits of the initial investment in equipment will be best realized when computers can be used frequently, over an extended period of time.

End Notes

[1] From the OCLC report, available at: http://www.districtdispatch.org/wp-content/uploads/2013/01/2012_OITP_digilitreport_1_22_13.pdf. Retrieved from: http://webjunction.org/content/dam/WebJunction/Documents/webJunction/DLG_Complete_v2.pdf Accessed 10 October 2014.
[2] Ibid. Accessed 10 October 2014.
[3] http://philaliteracy.org/think-can-educate-adults/ Accessed 13 October 2014.
[4] http://vtrural.org/about Accessed 10 October 2014.
[5] Report findings for community aspects of the program can be viewed online at: http://vtrural.org/programs/e-vermont/reports/final-report/accessing-online-world. Accessed 10 October 2014.
[6] http://e4vt.org/content/final-report-growing-vermont-businesses-online-broadband-basics-business Accessed 10 October 2014.
[7] http://e4vt.org/sites/default/files/library/files/e-Vermont/vt_digital_future_report.pdf, p. 7. Accessed 10 October 2014.
[8] http://e4vt.org/sites/default/files/library/files/e-Vermont/vt_digital_future_report.pdf, p. 7. Accessed 10 October 2014.
[9] Ibid., p. 13. Accessed 10 October 2014.
[10] Ibid., p. 15. Accessed 10 October 2014.
[11] http://broadband.ri.gov/Portals/0/Uploads/Documents/Public/Broadband%20Policy%20for%20RI_letter_p4.pdf Accessed 11 October 2014.
[12] Ibid. Accessed 11 October 2014.
[13] Ibid. Accessed 11 October 2014.
[14] Ibid. Accessed 11 October 2014.
[15] See the Colorado state Office of Information Technology website for more information about broadband planning at: http://www.colorado.gov/cs/Satellite/OIT-StateInitiatives/CBON/1251575390656 Accessed 12 October 2014.
[16] http://www.cde.state.co.us/cdelib/btopfinalnumbers Accessed 12 October 2014.
[17] Ibid., Accessed 12 October 2014.
[18] http://www.lrs.org/documents/fastfacts/311_bridging_digital_divide.pdf Accessed 12 October 2014.
[19] Ibid. Accessed 5 November 2014.
[20] This initial number from the grant proposal was expanded to 22 sites during the course of the grant.
[21] Information and data about the Fast Forward program are derived from personal experience as a training and development specialist for the project. Summary findings about the program are included in the final report for the program, completed by Davis Innovations. The report was never released or published by the state library.
[22] http://www.doit.state.nm.us/broadband/news.shtml Accessed 5 November 2014.
[23] http://www.doit.state.nm.us/broadband/reports/NMBBP_Report_Assess_Recommendations.pdf, p. 21. Accessed 8 October 2014.
[24] http://www.doit.state.nm.us/broadband/reports/NMBBP_Report_Assess_Recommendations.pdf p 22. Accessed 8 October 2014.
[25] Ibid. Accessed 8 October 2014.
[26] http://www.doit.state.nm.us/broadband/news.shtml Accessed 5 November 2014.
[27] http://www.theguardian.com/healthcare-network/2013/nov/01/nhs-preventive-care-digital-divide Accessed 8 October 2014.
[28] Ibid. Accessed 8 October 2014.
[29] http://nnlm.gov/outreach/consumer/hlthlit.html Accessed 5 November 2014.
[30] Columbia Telecommunications Corporation. (2012, November). *The Impact of Broadband Speed and Price on Small Business.* Retrieved from Small Business Administration: www.sba.gov/sites/default/files/rs373tot_0.pdf and cited in http://www.doit.state.nm.us/broadband/reports/NMBBP_Report_Assess_Recommendations.pdf, p. 31. Accessed 8 October 2014.

[31] Ibid. p. 32. Accessed 8 October 2014. For more on the term "Lone Eagles," see Lautman, M. (2011, April). *When the Boomers Bail: A Community Economic Survival Guide.*
[32] CTC draft report for Statewide Strategic Plan, version 1. August 29, 2014.
[33] 2013-2018 Economic Development Strategic Plan, July 2014 draft. Northeast Economic Development Organization. Unpublished.
[34] The lowest tuition is provided by Luna Community College. http://www.luna.edu/tuition_matrix/ . Accessed 9 October 2014. Even at these rates, a single class will cost over $100.
[35] Noted in conversation by library staff and directors at several libraries in the NEEDO region and across the state. October 2014. The exception is Raton, which, through its participation in the Fast Forward New Mexico grant project, received six training laptops and two months of free computer skills training in 2012. They are also fortunate to have a part-time librarian who doubles as their IT staff. These advantages, small though they may seem, have enabled the Raton library to continue to provide a small number of classes in basic computer skills.
[36] http://grants.nmsu.edu/community/outreach/. Accessed 9 October 2014.
[37] Taken from the webpage for the NMSU Grants Outreach Centers: http://grants.nmsu.edu/community/outreach/
[38] See the article on the project in the NWNMCOG newsletter: http://www.nwnmcog.com/uploads/2/7/9/8/2798127/november2012ctd_final.pdf Accessed 16 October 2014.
[39] For a full listing of municipalities and other special entities included in the SWNMCOG, go to: http://swnmcog.org/members.html Accessed 20 October 2014.
[40] Conversations with Silver City Library director Eileen Sullivan and staff. October 2014.
[41] For discussion of research relating to the perceived "relevance" of digital literacy, see chapter 4 of this report, "Digital Literacy and Broadband Adoption." It's important to note that there may be an element of self-selection in the comments we heard in the field, reflecting the fact that we represented digital literacy training and were unlikely to be approached by those who were uninterested or considered it irrelevant.
[42] This is the definition provided by the library at Cornell University. http://digitalliteracy.cornell.edu/ Accessed 8 October 2014.
[43] To read the full report, go to: http://www.doit.state.nm.us/broadband/news.shtml Accessed 13 October 2014.
[44] Ibid, p. 8. Accessed 13 October 2014.
[45] Ibid, p. 36. Accessed 13 October 2014.
[46] Ibid. Accessed 13 October 2014
[47] Ibid., p. 37. Accessed 13 October 2014
[48] PEW was established in the 1990s and now functions as a think tank devoted to capturing data on important issues in the United States. PEW center has been documenting Internet and computer use patterns in the U. S. for over a decade. See: http://www.pewresearch.org/about/mission-and-history/ Accessed 13 October 2014.
[49] http://www.pewinternet.org/2014/04/03/usage-and-adoption/ Accessed 13 October 2014. Percentages fall precipitously for those over the age of 75.
[50] http://www.pewinternet.org/2013/09/25/main-report-2/ Accessed 13 October 2014.
[51] The latter are commonly offered as reasons to avoid the internet by those who have not been taught the practices that allow one to avoid many of these threats.
[52] http://www.pewinternet.org/2013/09/25/main-report-2/ Accessed 13 October 2014.
[53] http://www.doit.state.nm.us/broadband/news.shtml p. 47. Accessed 13 October2014.
[54] Ibid., p. 9. Accessed 13 October 2014.
[55] http://www.pewinternet.org/2013/09/25/main-report-2/ Accessed 13 October 2014.
[56] Ibid. Accessed 5 November 2014.
[57] Ibid. Accessed 13 October 2014
[58] Ibid. Accessed 13 October 2014.
[59] http://www.doit.state.nm.us/broadband/news.shtml, p. 37. Accessed 13 October 2014.
[60] This is reported by many libraries, including Gallup, Silver City, Deming, and others.
[61] See the website for a full description of the program - http://www.imls.gov/programs/ Accessed 13 October 2014.