GED Preparation Through Distance Learning in Rural Pennsylvania

The Center for

Rural Pennsylvania

A Legislative Agency of the   Pennsylvania General Assembly

GED Preparation Through Distance Learning in Rural Pennsylvania

By
Esther Prins, Ph.D., Brendaly Drayton, and Ramazan Gungor, Pennsylvania State University
and Cathy Kassab, Ph.D.

May 2011

Executive Summary

Table of Contents

This study investigated the types, use, and effectiveness of distance learning (DL) for General Education Development (GED) candidates in rural Pennsylvania. The research goal was to provide information for enhancing DL GED study options.

Specifically, the study, which was conducted in 2009-2010, sought to: identify the types and use of GED distance education in rural Pennsylvania; describe the demographic characteristics and participation patterns of rural GED students in DL and face-to-face classes; determine the effectiveness of DL in preparing rural students to pass the GED tests; assess the cost of DL provision; and examine the advantages and disadvantages of DL for GED study.

The researchers used multiple data sources for the study, including the Bureau of Adult Basic and Literacy Education's (ABLE) e-Data system and GED Demographics survey, a telephone survey of non-ABLE DL providers, and telephone interviews with a key informant and DL staff members and students from ABLE-funded programs. Other data used for the study included: the ABLE-funded Distance Learning Project's student record, survey, and cost data; and a 2007 survey of ABLE-funded DL agencies.

The results indicated that, from July 1, 2004 to December 31, 2008, 4 percent (975) of rural students in ABLE-funded GED classes participated in DL, with 47 percent of their instructional hours in DL. About 75 percent of these students participated in DL and face-to-face instruction. The research identified only four non-ABLE funded organizations that provided GED DL classes for rural students.

The research found that DL is as effective as face-to-face classes in preparing students to pass the GED tests. The pass rate for rural DL students was 75 percent, compared to the national rate of 73 percent in 2008. The effectiveness of DL, coupled with the limited number of DL providers and students using these services, indicates great potential for the expansion of DL in rural regions.

The estimated average cost of DL provision for Pennsylvania adult learners is comparable to other states.

Print-plus-computer was the most common DL instructional format. Despite the limitations of print materials, they are widely used because programs and students lack the technological and financial resources that interactive, online instructional tools require. These results highlighted the need to provide professional development and financial resources for technologically sophisticated instruction, and to ensure affordable broadband and computer access in rural areas.

To take and pass the GED tests, rural DL students need to access testing sites. In 2009, about three out of four rural Pennsylvania counties had at least one public GED testing site.

DL offers students more options to study for the GED tests, enhanced academic growth, convenience and flexibility and the ability to combine GED study and work. Advantages of DL for educational providers included increased enrollment, student retention, and performance on accountability measures, and expanded instructional offerings.

The disadvantages and challenges of DL were students' restricted computer and Internet access; limited awareness of DL's existence and value; insufficient DL funding; and educational issues such as teacher-student communication, provision of timely help and feedback, and student struggles with isolation, time management, and difficult subject matter.

Compared to urban residents, rural Pennsylvanians with low educational attainment tend to have more limited access to adult education opportunities, typically because of fewer adult education providers in rural counties, the greater distances rural residents must travel to reach providers, and fewer public transportation options.

Introduction

Distance learning (DL) is a promising way to enable geographically isolated youth and adults to obtain a GED (General Educational Development)[1] credential, which is a prerequisite for pursuing postsecondary education and obtaining stable, higher-wage employment. In DL courses, students may complete all or part of an educational program in a geographical location apart from the institution hosting the program (U.S. Distance Learning Association, 2008), typically using print, television, video, radio, the Internet, or other technologies.

In 2008, 19 percent of rural Pennsylvanians aged 25 or older had less than a high school education compared to 13 percent of adults statewide (U.S. Census Bureau, 2008c). Also in 2008, 45 percent of rural adults (ages 25–64) had more than a high school degree while 56 percent of urban adults had degrees beyond a high school diploma (Keystone Research Center, 2008).

According to the 2006-2008 U.S. Census Bureau's American Community Survey, 39,352 (40 percent) of 16- to 19-year-old Pennsylvanians who were not enrolled in school did not have a high school degree (U.S. Census Bureau, 2008a). Among 18- to 24-year-olds statewide, 64,261 (14 percent) had less than a high school education (U.S. Census Bureau, 2008b). Nationally, 16- to 24-year-olds accounted for 39 percent of all participants in state-administered adult education programs, including adult basic education (ABE), GED, and English as a Second Language (ESL) (U.S. Department of Education, 2006).

In 2008, about 64 percent of all rural and urban GED test-takers in Pennsylvania were 16 to 24 years old (16-19=38 percent; and 20-24=27 percent. GED Testing Service, 2009a). However, GED Testing Service (2009a) data revealed that adult education services are not reaching potential GED candidates, as only about 2 percent (23,645) of the 1.6 million Pennsylvanians without a high school education took the GED tests in 2008.

Rural high school dropouts face distinct barriers to accessing GED preparation courses, including limited public transportation and limited numbers of adult education agencies. As such, DL holds great potential for reaching students who would otherwise be unable to enroll in a GED program or attend classes regularly (By the Numbers, 2007). This includes students living in remote areas, students who do not have reliable, affordable transportation, parents with young children and limited access to childcare, and those whose work schedules preclude regular class attendance (Tucho, 2000).

To date, the use of DL for non-formal and adult basic education has received little scholarly attention (Fleischman, 1998). The existing U.S.-based studies suggest that, although the quality of DL services is highly variable, DL can be as effective and cost-efficient as face-to-face education. The U.S. Department of Education's meta-analysis of online learning, for example, found that, on average, online students "performed better than those receiving face-to-face instruction" and that online instruction is effective "across different content and learner types," including adult students (Means et al., 2009). Although the meta-analysis did not include ABE students, the findings suggest online learning holds promise for use with this population. Similarly, an evaluation of California's DL initiative showed that, in 2001-2002, adult ESL distance learners had similar retention rates as traditional learners, were more likely to complete the course, and showed substantial learning gains (Porter, 2004).

The expansion of the Internet and broadband has created new possibilities for innovative types of DL. However, online distance education is still relatively rare in ABE because adult learners have had limited access to or familiarity with computers and the Internet (Askov et al., 2003). Indeed, the characteristics of the typical GED student (low levels of income and education) match those of the 34 percent of rural Pennsylvanians without Internet access (the Center for Rural Pennsylvania, 2008). Despite this digital divide, Pennsylvania and other states, such as California, Missouri, and Virginia, are experimenting with online programs for GED, ABE, and ESL students (eLearnVA, 2010; and Sebastian, 2007).

The Pennsylvania Department of Education's Bureau of Adult Basic and Literacy Education (ABLE) administers GED educational services and offers DL for adults. Pennsylvania was one of the original states to participate in Project IDEAL (Improving Distance Learning for Adult Learners), an initiative of the University of Michigan and the U.S. Department of Education, with funding from the Office of Vocational and Adult Education (OVAE).

The Bureau of ABLE and its contractor, the Tuscarora Intermediate Unit #11 (TIU), began to offer distance learning in 2001. They have been involved in DL through Project IDEAL's evolution, and continue membership in IDEAL as an alumni state. Each year TIU has expanded the use of DL for adult education through the Distance Learning Project (DLP) by using online and print-based marketing, providing professional development to adult education agencies, and offering varied class subjects and formats (online, print-based) to meet student needs.

The only prior investigation of DL in Pennsylvania was a 2007 survey of 131 ABLE-funded adult education programs conducted by TIU (By the Numbers, 2007). According to the survey, 78 ABLE programs were providing DL across the state. Analysis of ABLE's e-Data showed that in 2006-2007, 31 of 82 DL classes were classified as GED courses. Of the 906 students enrolled in ABLE-funded DL classes in 2006-2007, 65 percent (586) resided in rural counties. Also, 79 percent (713) of DL students had

---

[1] GED® and the GED Testing Service® are registered trademarks of the American Council on Education® and may not be used or reproduced without the express written permission of the American Council on Education.

less than a high school diploma or equivalent, indicating that the majority of Pennsylvania distance learners needed to obtain a GED.

Although this study provided a first look at DL for Pennsylvania's adult learners, educators and policy makers know little about the availability and use of DL in rural areas, the characteristics of rural adult learners who use these services, which organizations other than ABLE-funded agencies provide DL, or the effectiveness of DL compared to face-to-face GED courses.

Goals and Objectives

This study, which was conducted in 2009 and 2010, investigated the types, use and effectiveness of DL for rural Pennsylvania GED students to provide information to policy makers and adult education professionals.

The research objectives were to: identify which types of GED distance education (such as delivery system and materials) are currently available to students in rural Pennsylvania and to estimate how many students per year currently use each method; identify the demographic characteristics and patterns of program participation for rural GED students using DL and to compare these to rural students in face-to-face GED classes; assess the effectiveness of DL compared to face-to-face classes in preparing rural students to pass the GED tests; assess the cost of using DL to provide GED education to rural students; and assess the advantages and disadvantages of using DL to support rural students' completion of the GED.

Methodology

The research used a mixed methods approach using existing quantitative data, a survey of non-ABLE DL providers, and interviews with a key informant and selected ABLE-funded DL staff and students.

Quantitative data sources and procedures

The researchers created a database (hereafter called the Distance Learning Database) using existing data from the Bureau of ABLE's e-Data system, the GED U.S. Demographics survey, and the Distance Learning Project (DLP).

The Distance Learning Database included adults who: participated in one or more ABLE-sponsored adult education programs from July 1, 2004 to December 31, 2008;

were 15 years old or older[2]; lacked a high school or GED diploma; and resided in rural municipalities as defined by the Center for Rural Pennsylvania.[3]

If an adult relocated from an urban to a rural municipality or vice versa during the study time period, the data for that adult was excluded from the database. In addition, adult GED scores for the same period were obtained from the GED scoring service database, which also contains data from the U.S. demographics survey conducted by the GED Testing Program.

Variables gleaned from the other databases and included in the Distance Learning Database are: county and municipality of residence, whether the adult is enrolled in a DL class, the number of instructional hours in each class (DL or other types), whether the adult is in a GED class, pretest and posttest assessment scores, assessed skill level, dates of program entry and exit, date of birth, gender, race/ethnicity, highest grade completed upon program entry, low-income status[4], employment status, educational goals, whether the adult is part of a correctional program, the distance the adult traveled to the GED testing center, years out of school, reasons for taking the GED test, materials used for instruction (workbook or online instruction), Internet access at the time of intake, and program costs per student.

Students receiving blended (hybrid) or pure DL services were differentiated since e-Data contains information on all classes in which each adult participates. "Blended" DL adults attend DL and face-to-face classes, whereas "pure" DL students are only registered in DL classes. "Face-to-face" students receive no DL instruction. Most distance learners have some face-to-face hours for intake, orientation, and assessment. For the purpose of this study, "pure" DL students had completed no more than five face-to-face hours.[5]

The researchers used the Distance Learning Database to identify salient demographic and educational factors and participation indicators for rural GED students enrolled in DL programs and to assess the effectiveness of DL versus face-to-face classes in preparing students to pass the GED tests.

They also used the Distance Learning Database to obtain estimates of the number of rural GED students receiving DL services and of the different types of DL services (pure or blended) being received through ABLE-funded programs.

---

[2] For the purpose of this study "adults" and "adult learners" refer to these students aged 15 or older.

[3] Rural municipalities have a population density of "less than 274 persons per square mile" or have a total population of "less than 2,500 unless more than 50 percent of the population lives in an urbanized area," as defined by the U.S. Census Bureau (Center for Rural Pennsylvania, 2003).

[4] Low income adults were defined as those whose family income was no more than 70 percent of the federal income standard for a family of his or her size.

[5] Five hours was chosen as the threshold because it can take learners up to five hours to complete program orientation and assessment (i.e., testing), both of which are expected to occur face-to-face.

Survey of non-ABLE DL providers

The researchers developed a survey to obtain data on non-ABLE agencies that provide GED classes via distance learning and that serve rural students. Some of the survey items were adapted from TIU's survey of ABLE-funded adult education programs (By the Numbers, 2007).

Through a series of referrals and eliminations, the researchers conducted telephone surveys with four non-ABLE agencies, which were all non-profits. These agencies included a public television station, two community colleges, and a community-based organization that provides education and social services for Latinos. Collectively, these agencies served the following counties: Chester, Columbia, Delaware, Erie, Lackawanna, Luzerne, Northumberland, Pike, and Wayne. One agency served the whole state. One of the agencies also served a county in Delaware and a county in Maryland. The organizations had provided GED classes via DL for 3.5 to 8 years (average = 5.5).

All survey respondents were administrators or program coordinators.

Interviews with DL staff and students

The researchers also interviewed ABLE-funded program staff and students engaged in GED via DL. The staff interviews focused on the advantages and disadvantages of DL for agencies and students, state policies pertaining to DL, the costs of DL provision, and Internet use in DL. The student interviews explored the students previous experiences in GED and DL classes (such as reasons for enrolling in a DL class, and the advantages and challenges of DL), perceived support from program staff, program materials, and use of technology.

In total, the researchers conducted interviews with nine staff from six agencies and 16 students.

Key informant interview

The researchers conducted a key informant interview with a person whom other study participants suggested was very knowledgeable about GED instruction, DL, and adult education in rural areas, both in Pennsylvania and nationally. The interview focused on key policy issues and recommendations.

Results

Types and use of GED distance education in rural Pennsylvania

Between July 1, 2004 and December 31, 2008, 24,143 rural GED students participated in Bureau of ABLE programs. Of these, 975 students participated in DL classes. During a given program year, between 153 and 324 rural GED students participated in DL instruction: 153 in 2004-2005; 189 in 2005-2006; 324 in 2006-2007; and 289 in 2007-2008. The 2008-2009 figures were not computed since the Distance Learning Database did not contain data for the second half of the program year.

The median total hours of instruction for DL students was 49, with 15 hours being spent in DL as opposed to face-to-face activities. On average, 47 percent of DL students' instructional hours were through DL (See Table 1).

Pure or blended DL

About 25 percent of the 975 DL learners were pure DL students, meaning they spent five hours or less in face-to-face classes. The remaining students were blended DL learners who spent more than five hours in face-to-face instruction. Typically, both pure and blended DL students participated in an average of 15 hours of distance learning. Blended learners participated in an average of 38 face-to-face hours of instruction and pure DL learners did not participate in any face-to-face instruction. These results indicate that pure DL learners did not substitute DL instruction for face-to-face instruction.

Instructional formats and types of materials used

The survey of ABLE-funded DL providers (n=126, By the Numbers, 2007) indicated that print-plus-computer was the most common instructional format, followed by print-based only and computer-based only. The most frequently used curricula were GED Connection (81 percent), Skills Tutor (68 percent), Workplace Essential Skills (65 percent), and pre-GED Connection (48 percent). Worksheets and workbooks (89 percent), online resources (81 percent), books (50 percent), and videos (31 percent) were the most common supplemental materials. These data are not limited to rural programs and students, but there is no reason to believe that rural programs would use different DL curricula.

Table 1. Participation in Distance Learning and Face-to-Face Instruction (Hours of Participation) for Rural Distance Learners, July 1, 2004 to December 31, 2008

Type of Distance Learner	n	Median # of Hours	Minimum # of Hours	Maximum # of Hours
All distance learners				
Total DL hours	975	15	<1	512
Total face-to-face hours	975	22	0	1,086
Total hours	975	49	<1	1,111
Percent of hours in DL	975	42%	<1%	100%
Blended distance learners				
Total DL hours	736	15	<1	512
Total face-to-face hours	736	38	6	1,086
Total hours	736	65	8	1,111
Percent of hours in DL	736	29%	<1%	96%
Pure distance learners				
Total DL hours	239	15	<1	472
Total face-to-face hours	239	0	0	5
Total hours	239	16	<1	472
Percent of hours in DL	239	100%	17%	100%

The ABLE-funded program personnel interviewed for this study reported using a combination of print-based, computer-based, and video formats. Print-based materials (workbooks, worksheets, books, supplemental materials) were the most frequently mentioned. These included GED Connection, pre-GED Connection, Madison Heights and Lifelines, GED Illinois, and KET DL programs and books. The most common computer-based curriculum was Skills Tutor; one person each reported using webinars (online conferencing), PBS online (an online supplement to GED Connection, Pre-GED Connection, and Workplace Essential Skills workbooks), typing software, and podcasts (minimal use). Six programs also used videos, in some cases as part of a DL curricular package such as Madison Heights and Lifelines.

Although print-based materials were commonly used in ABLE-funded programs, staff members identified several limitations: the use of print materials delays students' receipt of materials and the program's receipt of assignments; students cannot receive quick feedback on their work, which may impede their learning; and compared to online materials, some personnel found print- and video-based materials to be less interactive and less conducive to helping students understand the content and solve problems.

According to the survey of non-ABLE DL providers, three agencies used online courses (using tools such as e-mail, chat rooms, discussion boards, streaming video, and instructional software) as a delivery system. One of these agencies also used workbooks in face-to-face instruction. The fourth organization used only print-based courses. The Internet was the most common DL instructional format, followed by print and video.

Similarly, agencies used four types of instructional materials for DL GED students: online resources, books, worksheets and workbooks, and DVDs. Three agencies used only one type of material, whereas the other agency used all four types.

Non-ABLE agencies used one to three types of published curricula. As with ABLE-funded agencies, the most common was GED Connection. Skills Tutor (the second most common curriculum in ABLE programs) was used in two non-ABLE organizations, and the GED Video Partners workbook and El GED en Español (The GED in Spanish) were each used by one organization.

DL services provided by non-ABLE agencies

The findings indicate that aside from state-funded programs, there are few other known providers of DL for rural GED students in Pennsylvania. Key informants identified nine online GED programs that reach a national audience. Although rural Pennsylvanians likely use these GED preparation services, analysis of these companies was beyond the scope of this study. The following data, therefore, pertain to the four non-ABLE agencies that completed the survey.

One agency, a public TV station, had provided GED classes only via DL. (After this study was completed, the researchers learned these classes were no longer being offered due to loss of funding.) The other three agencies provided DL for learners who cannot participate in face-to-face instruction and, in one case, to prevent interruptions in instruction, or "stop-outs." The TV station offered a web-based GED preparation program. A community college also provided online GED courses, and students enrolled in the other community college attend two class sessions, take a pre-test, and take a post-test six weeks later. The fourth agency offered a home study option for students preparing for the Spanish GED tests. Most of these students are agricultural workers. In all four agencies "none or very few" of the students participate in blended distance instruction.

During the agencies' last complete fiscal year, they served between 19 and 39 GED students via DL (average = 31) and between eight and 24 students per agency obtained their GED diploma (average = 14). In three organizations, rural students comprised approximately 16 percent, 50 percent, and 90 percent of all DL GED students. The remaining agency did not have data on rurality.

Student Internet access

Survey data on Internet access maintained by the DLP were available for 80 rural DL students from the 2005-2006 program year through May 2010. Fifty-five percent of the survey respondents used print materials to participate in DL, and 45 percent used the Internet.

The researchers determined the percentage of respondents who had access to the Internet through various modalities such as home, work or through a friend. They further broke down the figures by whether respondents used print materials or the Internet to participate in DL.

Overall, 52 percent of the 80 survey respondents had Internet access at home. Survey respondents who used the Internet to participate in DL were significantly more likely to have access at home than those using print materials. Specifically, 86 percent of respondents who participated in DL through the Internet had Internet access at home.

None of the respondents had access to the Internet at work. Nine percent of respondents using print materials to participate in DL had Internet access through a friend or family member, and none of those participating through the Internet indicated accessing the Internet in this way. The difference was not statistically significant. Only 2 percent of respondents using print materials and none of those using the Internet for DL indicated having Internet access through some other means.

The survey also asked whether DL participants had access to the Internet via dial-up modem or DSL cable. While only 25 out of the 80 respondents answered this question, the responses were telling: 70 percent of respondents using print materials said they had dial-up Internet access, compared to 7 percent of those using the Inter-

net to participate in DL. Conversely, only 30 percent of print-based respondents had Internet access via DSL/cable compared to 93 percent of DL respondents who participated through the Internet. These differences are statistically significant.

Interview data revealed that 12 out of 16 students (75 percent) had broadband Internet and one had dial-up. One student's Internet access type was unknown. Students with Internet access either owned a computer—in some cases, an old, slow computer—or borrowed one from a friend or relative. Of the two students without a computer or Internet, one used the computer at the library. Nine of the 17 students used a computer and/or Internet for their GED studies.

Support services provided by ABLE-funded DL programs

In addition to providing academic instruction, DL programs provide a host of support services to enable students to attain their goals. Unlike face-to-face instruction, distance learning students cannot raise their hand to ask a question, stay after class to talk with a teacher, or turn to a classmate to ask for help. Thus, DL instructors have to be creative in providing students with both academic support and case management services, such as referrals to social service agencies, that aid persistence in DL.

Table 2. ABLE-funded Program Support Services for DL Students

Type of support	Number of mentions
Provide support via Internet	8
E-mail	4
Teleconferencing	1
Discussion boards	1
Instant messaging	1
Webinars	1
Provide face-to-face support	7
Personal meetings	4
Home visits	2
Send tutor to student's home	1
Provide support via telephone	7
Phone conversation	6
Text messaging	1
Send postal mail	6
Make referrals	3
To local literacy center	2
To college	1
Provide supplemental distance lessons	3
For mail delivery or pick-up	2
Instructional software	1
Provide other forms of support	6
Fax lessons	1
Lend or donate computers	1
Provide library vouchers for Internet usage	1
Help students plan study time and set goals	1
Provide weekend tutor access	1
Provide on-site childcare if attending a class	1

This requires using multiple modes of communication and helping students overcome barriers, such as limited transportation or Internet access. For example, one program purchased multi-user software to give to students. Another program occasionally donated computers to students and provided educational software that did not require Internet access. To expand DL students' online options, another program established an agreement with county libraries. Table 2 summarizes the types of support ABLE-funded DL programs provided to DL GED students.

On the whole, students had a positive assessment of their communication with DL instructors (11 out of 13). They described teachers as "helpful" and "supportive" and appreciated being treated "like a human being." One person had no communication with a teacher, and another had the opportunity to communicate but did not need to do so. Forms of support from instructors included being "available," such as giving students their cell phone number, explaining the program's GED instructional options, such as DL workbooks and face-to-face classes, giving encouragement, granting extensions on assignments, and providing assistance with academic work via phone, e-mail, face-to-face meetings, and the Internet.

Demographic and educational characteristics, patterns of program participation, and comparison to face-to-face students

Distance learners in correctional facilities

The research results indicated that approximately 9 percent of rural GED distance learners were in a correctional facility upon program entry. Moreover, none were pure distance learners and all were blended learners.

Because of the structural constraints inherent in correctional education, these learners were excluded from the remaining analyses.

Patterns of program participation for pure and blended distance learners

Twenty-seven percent of distance learners were pure distance learners and 73 percent were blended learners. Both groups of learners typically participated in an average total of 15 DL hours of instruction. Pure distance learners typically participated in one hour of DL instruction per week, compared to less than one hour per week for blended learners. On the other hand, blended learners typically participated in a total of 36 face-to-face hours of instruction and pure distance learners did not participate in any face-to-face instruction. Typically, 30 percent of blended distance learners' instruction was in DL, compared to 100 percent for pure distance learners. Pure distance learners participated in the adult education program for 132 days (about four months), compared to 223 days (about seven months) for blended learners.

Demographic and socio-economic characteristics

Rural Pennsylvania GED distance learners tended to be young, with a median age of 22, which was slightly lower than the national average of 25 for all GED test-takers (GED Testing Service, 2009b). Only 20 percent of rural distance learners were over age 35.

Rural distance learners, including pure and blended, were predominantly female (65 percent). Only 61 percent of pure DL students were women, compared to 66 percent of blended distance learners, but the difference was not statistically significant.

Rural distance learners were primarily white (95 percent), and only one learner out of the 890 in the sample indicated that he/she was an English-as-a-Second-Language (ESL) learner.[6]

Rural DL students had typically completed the 10th grade, the same as the national average for all GED candidates (GED Testing Service, 2009b). However, a significant minority (10 percent) of learners had completed 8th grade or less, indicating the need for basic-level GED or pre-GED instruction.

Fifty-six percent of all distance learners were unemployed, and another 9 percent were unavailable for work.[7] Twenty percent were employed full-time, and 15 percent were employed part-time. Blended distance learners were more likely to be unemployed than pure distance learners, and less likely to be employed part-time. Accordingly, blended distance learners were more likely to receive public assistance through Temporary Assistance for Needy Families (TANF) than pure distance learners (12 percent and 4 percent, respectively). Consistent with this, pure distance learners were

---

[6] Despite their ESL status, these DL learners were assessed as adult basic education (ABE) or adult secondary education (ASE) learners, and are included in analyses reported here.
[7] Learners who are "unavailable for work" are unable or indicate an unwillingness to accept employment even if it is offered at the time these data were collected. This could include, for example, stay-at-home mothers or people with disabilities.

Table 3. Demographic and Socio-Economic Characteristics of Blended and Pure Rural GED Distance Learners: July 1, 2004 to December 31, 2008

Characteristic	Blended Distance Learners n	Blended Distance Learners %	Pure Distance Learners n	Pure Distance Learners %	All Distance Learners* n	All Distance Learners* %
Age						
15 to 17	82	13%	27	11%	109	12%
18 to 20	214	33%	77	32%	291	33%
21 to 25	121	19%	39	16%	160	18%
26 to 35	104	16%	46	19%	150	17%
36 to 50	101	16%	40	17%	141	16%
51 to 65	28	4%	10	4%	38	4%
66 and over	1	0%	0	0%	1	0%
Total	651	101%	239	99%	890	100%
Average Age (median)	22		22		22	
Sex						
Female	429	66%	146	61%	575	65%
Male	222	34%	93	39%	315	35%
Total	651	100%	239	100%	890	100%
Race/Ethnicity						
Caucasian	619	95%	226	95%	845	95%
African American	21	3%	6	2%	27	3%
Hispanic	7	1%	6	2%	13	2%
Other (Asian, Native American, Pacific Islander)	4	1%	1	0%	5	0%
Total	651	100%	239	99%	890	100%
ESL Participant						
Yes	1	0%	0	0%	1	0%
No	650	100%	239	100%	889	100%
Total	651	100%	239	100%	890	100%
Highest Grade Completed						
8th grade or less	65	10%	21	9%	86	10%
9th grade	122	19%	36	15%	158	18%
10th grade	225	34%	87	36%	312	35%
11th grade	233	36%	94	39%	327	37%
Secondary school diploma or certification, or some post-secondary schooling	6	1%	1	0%	7	1%
Total	651	100%	239	99%	890	101%
Median Highest Grade Completed	10th		10th		10th	
Employment Status						
Employed Full-time	124	19%	52	22%	176	20%
Employed Part-time	84	13%	46	19%	130	15%
Unemployed	383	59%	117	49%	500	56%
Unavailable for Work	60	9%	24	10%	84	9%
Total	651	100%	239	100%	890	100%
On Public Assistance						
Yes – TANF	80	12%	9	4%	89	10%
Yes – Other	188	29%	66	28%	254	28%
No	383	59%	164	69%	547	62%
Total	651	100%	239	100%	890	100%
Low-income Status						
Yes	395	61%	139	58%	534	60%
No	256	39%	100	42%	356	40%
Total	651	100%	239	100%	890	100%
Single Parent						
Yes	140	22%	56	23%	196	22%
No	511	78%	183	77%	694	78%
Total	651	100%	239	100%	890	100%
Disabled						
Yes	126	19%	33	14%	159	18%
No	525	81%	206	86%	731	82%
Total	651	100%	239	100%	890	100%
Learning Disabled						
Yes	94	14%	26	11%	120	14%
No	557	86%	213	89%	770	86%
Total	651	100%	239	100%	890	100%

Some totals do not sum to 100% due to round-off error. *Excludes learners in correctional facility on program entry.

less likely to receive any form of public assistance than blended distance learners (31 percent and 41 percent, respectively). Overall, 10 percent of distance learners received public assistance through TANF and another 28 percent received other types of public assistance, such as food stamps. Sixty-two percent did not receive either cash or in-kind public assistance.

Sixty percent of rural DL students were low income. In fact, 35 percent of rural distance learners who were not receiving public assistance were low income. All (100 percent) of the rural DL students receiving public assistance were considered low income. About 22 percent of the rural distance learners were single parents.

Eighteen percent of rural distance learners had a disability. Blended DL students were somewhat more likely to be disabled than pure distance learners (19 percent and 14 percent, respectively). Seventy-six percent of rural distance learners who were considered disabled had a learning disability.[8] Blended and pure distance learners were similar with respect to this finding – 75 percent of blended distance learners and 79 percent of pure distance learners checked both "disability" and "learning disability."

Demographic and socio-economic characteristics of rural GED distance learners, as well as distributions for blended and pure distance learners, are presented in Table 3. The demographic and socio-economic characteristics of pure and distance learners were similar for the most part.

Educational characteristics of distance learners

Table 4 presents the educational level of rural DL students on entry into the adult education program. The National Reporting System for Adult Education requires adults to be placed into one of the following adult basic education (ABE) levels, based on results of a standardized assessment: beginning literacy ABE (grade level 0-1.9[9]), beginning basic ABE (grade level 2-3.9), low intermediate ABE (grade level 4-5.9), high intermediate ABE (6-8.9), low adult secondary education (ASE) (grade level 9-10.9), and high ASE (grade level 11-12.9).[10] Ninety-eight percent of the rural DL students were administered an assessment. Only a small percentage was placed at the lowest

Table 4. Educational Level on Entry and Advancement Level for Blended and Pure Rural GED Distance Learners, July 1, 2004 to December 31, 2008

Educational Level on Entry	Blended Distance Learners		Pure Distance Learners		All Distance Learners	
	n	%	n	%	n	%
Beginning literacy ABE	7	1%	0	0%	7	1%
Beginning basic ABE	45	7%	14	6%	59	7%
Low intermediate ABE	153	24%	28	12%	181	21%
High intermediate ABE	212	33%	73	32%	285	32%
Low ASE	75	12%	41	18%	116	13%
High ASE	153	24%	74	32%	227	26%
Total	645	101%	230	100%	875	100%
Average Entry Ed. Level (mean)	High Intermediate ABE		High Intermediate ABE/ Low Adult Secondary		High Intermediate ABE	
Advanced 1+ Educational Levels[1]						
Yes	331	92%	78	93%	409	92%
No	27	8%	6	7%	33	8%
Total	358	100%	84	100%	442	100%
Number of educational levels advanced (mean)	1.8		1.4		1.7	

Some totals do not sum to 100% due to round-off error. [1]Among those with a posttest assessing educational level; includes adults receiving GED certificate or high school diploma.

educational levels (beginning literacy ABE or beginning basic ABE). Twenty-one percent were assessed as low intermediate ABE, 32 percent were assessed as high intermediate ABE and 39 percent were assessed as low or high adult secondary education. On average, rural DL GED students were assessed as high intermediate ABE, that is, 6th to 9th grade in language, reading, and math. (To enroll in the Distance Learning Project classes, students must have a minimum reading score of high intermediate ABE.)

Pure distance learners entered the adult education program at a higher educational level, on average, and were assessed as high intermediate ABE to low ASE. Blended learners were assessed as high intermediate ABE. Pure DL students were less likely to be assessed as low intermediate ABE than blended learners (12 percent versus 24 percent, respectively), and more likely to be assessed at the low or high ASE (low ASE: 18 percent and 12 percent, respectively; high ASE: 32 percent and 24 percent, respectively). These results are consistent with blended distance learners' lower educational attainment.

The percentage of rural distance learners (including pure and blended) who advanced one or more educational levels was calculated for learners who were administered a posttest, passed the GED, or obtained a secondary school certificate. The majority (92 percent) of rural distance learners advanced one or more educational levels. On average, rural DL GED students advanced about two educational levels: for example, from high intermediate

---

[8] Student records in e-Data include one variable for "disability" and another for "learning disability." The former includes "any type of physical, intellectual, psychological, or learning disability that impairs or restricts one or more major life activities including walking, seeing, hearing, speaking, learning or working…. A disability should be recorded if it can be directly observed, is documented, or can be assessed through a valid assessment instrument or procedure designed to identify disabilities" (Bureau of Adult Basic and Literacy Education, 2009, p. 15). By contrast, a learning disability "can be self-reported or officially documented" (p. 15). Thus, learners with both boxes checked may have only a learning disability, or a learning disability *and* another type of disability.

[9] Each educational level corresponds to a range of grades in school, such as 6th to 8th grade. The tenths are read as months. For instance, a 1.1 grade level in reading is equivalent to 1st grade, 1st month, whereas 1.9 means 1st grade, 9th month.

[10] The NRS also includes six educational levels for ESL students.

ABE (on entry) to high adult secondary education (posttest). On average, pure DL students' educational levels increased less than that of blended DL students because the former started the program at a higher level and had fewer levels through which to progress.

Table 5 presents the goals for both blended and pure rural DL GED students for their adult education participation and the percentage of students who met their goals. The most frequent goals were to enter employment (19 percent) or retain employment (22 percent). Forty-nine percent of students met the former goal and 62 percent retained employment.

Table 5. Goals Set and Met By Rural GED Distance Learners, July 1, 2004 to December 31, 2008 (n=890)

Goals	Goal Listed		Goal Met (if listed)	
	n	%	n	%
Advance to post-secondary education/training	63	7%	29	46%
Employment				
Enter Employment	169	19%	83	49%
Retain Employment	198	22%	123	62%
Quality of life and personal goals				
Achieve US citizenship skills	1	0%	0	0%
Register to vote	16	2%	2	12%
Vote for the first time	9	1%	1	11%
TANF grant or equivalent reduced/eliminated	7	1%	3	43%
Increase involvement in community activities	39	4%	21	54%
Family and parenting				
Increase involvement in children's education	63	7%	44	70%
Increase involvement in children's literacy activities	96	11%	72	75%

Similarities and differences between distance and face-to-face rural GED students

Controlling for relevant demographic, educational and participation indicators, the researchers found the following variables as key factors associated with whether a learner was a distance learner or a face-to-face learner:
- gender,
- low-income status,
- educational level on program entry,
- total hours of instruction, and
- duration of enrollment.

Distance learners were significantly more likely to be female and low income than face-to-face learners. Also, the educational level on entry for distance learners was significantly higher than that for face-to-face learners. Distance learners participated in a significantly greater number of hours of instruction and were enrolled for a longer period of time than face-to-face learners.

Variables that did not differentiate rural distance and face-to-face learners were being a single parent, age, highest grade completed, being employed on entry, having the goal to enter or retain employment, and total instructional hours per week.

The researchers used the same model to identify key similarities and differences between pure and blended distance learners. The sample size for the analysis was 701, of which 198 were pure distance learners and 503 were blended distance learners. Results indicate that when relevant demographic, educational, and participation indicators were controlled, the following variables were key factors associated with whether a learner was a pure or blended distance learner:
- educational level on program entry,
- total hours of instruction,
- total number of hours of instruction per week, and
- duration of enrollment.

The educational level on entry for pure distance learners was significantly higher than that of blended distance learners. On the other hand, blended distance learners participated in significantly more total hours of instruction across the course of their enrollment and per week, and were enrolled for a longer period of time. At the same time, after controlling relevant demographic, educational, and participation indicators, none of the demographic variables nor the goal to enter or retain employment were significantly related to whether the distance learner was a pure or blended learner. Older learners tended to be pure distance learners.

Effectiveness of DL compared to face-to-face GED classes

Of the 24,143 rural GED students participating in Bureau of ABLE programs between July 1, 2004 and December 31, 2008, 6,265 rural ABLE students took the GED exam.[11] Of these students, 355 (5 percent) participated in DL through ABLE-funded agencies. Seventy-five percent of these DL learners passed the GED, slightly higher than the national pass rate of 73 percent in 2008 (GED Testing Service, 2009a). Slightly less than one-fifth (18 percent) of rural DL students completed the GED by taking all five tests, but did not pass the examination.[12] The remaining 7 percent of rural DL learners did not complete all the GED content area tests.

Typically, DL learners who passed the GED tests participated in 18 distance learning instructional hours

[11] The latter figure only includes those students who (1) took the English version of the GED, (2) indicated that their primary language is English, (3) were adult basic education or adult secondary education learners, (4) provided research permission to use their data from the GED and GED U.S. Demographics survey, and (5) did not reside in a correctional facility on entry into the adult education program, based on their record in e-Data.

[12] The maximum score on each of the five content area tests is 800 points, for a maximum total score of 4,000. Passing the GED tests requires a minimum total score of 2,250 and a minimum of 410 on each content area test.

Table 6: State and National GED Pass Rates, 2004-2008

Year	Pennsylvania	U.S.
2004	67%	71%
2005	70%	72%
2006	66%	69%
2007	69%	72%
2008	70%	73%

Source: GED Testing Service

(based on the median). Those DL learners who completed but did not pass the GED tests participated in a median of 26 distance learning instructional hours. One explanation for this discrepancy is that those students who passed the GED were more academically prepared upon enrolling in DL and needed fewer instructional hours. In other words, they needed only a brief review of the subject matter. By contrast, the non-passing students may have had academic challenges that additional instruction was unable to remedy.

The annual pass rates for rural distance learners are listed below:

- 2004-2005: 92 percent
- 2005-2006: 80 percent
- 2006-2007: 83 percent
- 2007-2008: 69 percent

Table 6 reports the Pennsylvania and U.S. pass rates for the same years.

The 2008-2009 figures were not computed, as the Distance Learning Database does not contain data for the second half of the program year. Rural Pennsylvania distance learners who took the GED tests in 2007-2008 were less likely to pass than those who took it earlier in the data series (2004-2005). While not statistically significant, the pass rate also declined between 2004-2005 and 2006-2007. It is likely that these results are an artifact of the database. That is, due to the longitudinal nature of the data, later test takers would have been less likely to have taken the GED tests as many times as those taking it earlier in the data series, and hence would be less likely to have passed it at that point in time.

The researchers analyzed the effectiveness of participation in DL compared to face-to-face instruction for completing and passing the GED, controlling for demographic, educational, and participation indicators. The sample size for the analysis was 5,848. The analysis indicated that distance learners were no more or less likely to pass the GED than face-to-face learners. In addition, whether a learner was a distance learner or a face-to-face learner was not related to the number of component GED tests passed.

The analysis also indicated that, even after controlling for all of the factors in the model, whether a student is a distance or face-to-face learner was not statistically related to passing the GED. Factors associated with passing the GED in this sample were being younger in age, being employed, not being disabled, having higher educational levels on entry into the adult educational program, and being enrolled for a shorter duration (days in the program).

The same model was used to assess the relative effectiveness of pure and blended distance learning for passing the GED tests. The sample size for the analysis was 303. The only indicator that was significantly related to passing the GED tests was educational level on entry into the adult education program. As in the prior analyses, distance learners with a higher educational level on entry were more likely to pass the GED tests.

Distribution of GED testing sites in rural counties

The accessibility of GED test sites is an important factor in DL students' ability to take and pass the GED tests. Data on the distribution of GED test sites in rural counties (as of August 2009) were obtained from Pennsylvania's then-GED administrator. According to the administrator, there are public GED Test Centers statewide and test sites at state correctional institutions and jails, which test only their residents. Some counties have addendum testing locations that are operated by a test center from another county and open to the public (Janice Wessell, personal communication, 8/3/2009).

The research found that, excluding addendum sites, each rural county had an average of .96 public GED Test Centers (median=1). Of the 48 rural counties, 11 had no public GED Test Centers. Six of these counties are clustered along a diagonal corridor from Fulton County on the south-central border to Sullivan County in the northeast. Twenty-nine counties (60 percent) had one public GED Test Center, and only eight (17 percent) had two or three public GED Test Centers. In 2009, 77 percent of rural counties had one or more public GED Test Centers and approximately 23 percent had none.

Table 7 on Page 14 reports the number of public GED Test Centers and public addendum sites, excluding correctional and institutional sites. These data provide a more comprehensive view of testing sites for rural DL and face-to-face GED candidates. With the addition of addendum sites, the average number of public testing sites increased to 1.29 (median=1). On average, 15 northwest rural counties had the most public sites (1.13), whereas five southwest counties had the fewest (1.0). Even after including addendum sites, the same 11 counties still had no public testing site. That is, the addendum sites were located in counties that already had at least one public Test Center. Between 13 percent (northwest) and 40 percent (southwest) of the rural counties in each geographic region had no public testing sites.

Although rural GED test-takers travel farther to the test site than their urban counterparts, both groups travel an average 25 miles or less (Cathy Kassab, personal communication with first author, May 24, 2010).

Cost of DL provision
Distance Learning Project costs

According to 2008-2009 data from the ABLE-funded Distance Learning Project, $164,421 was budgeted for

Table 7: Distribution of Public Test Centers and Addendum Sites in Rural Counties

# of Public GED Test Centers and Addendum Sites	# and % of Rural Counties	Counties and Geographic Regions
0 public testing sites	11 (23%)	Central-Northeast (5): Columbia, Montour, Northumberland, Snyder, Sullivan South-Central (2): Fulton, Juniata Northwest (2): Forest, Potter Southwest (2): Greene, Washington
1 public testing site	22 (46%)	Northwest (9): Armstrong, Butler, Cameron, Clarion, Crawford, Elk, Indiana, Jefferson, Warren Central-Northeast (8): Carbon, Centre, Monroe, Pike, Schuylkill, Susquehanna, Wayne, Wyoming South-Central (4): Adams, Bedford, Mifflin, Perry Southwest (1): Somerset
2 public testing sites	8 (17%)	Central-Northeast (3): Clearfield, Clinton, Lycoming South-Central (3): Blair, Franklin, Huntingdon Northwest (1): Lawrence Southwest (1): Cambria
3 public testing sites	5 (10%)	Northwest (3): McKean, Mercer, Venango Central-Northeast (2): Tioga, Union
4 public testing sites	1 (2%)	Central-Northeast: Bradford
5 public testing sites	1 (2%)	Southwest: Fayette

distance instruction. The cost per student was $613.51, whereas the cost per enrolled student, that is, those completing 12 hours or more of DL instruction, was $687.95. The Tuscarora Intermediate Unit (TIU), which operates the Distance Learning Project, serves as a "secondary agency" that provides DL instruction for students who are referred from "primary agencies," usually near the student's community.

Due to the complexity of this DL delivery system, two factors must be considered when interpreting these figures (Carol Shefrin, personal communication, March 22, 2010):

- The cost reflects TIU's "investment for each student as secondary agency; [the] primary agency may have…additional costs associated with that learner. These additional costs might reflect a broad range from just providing intake and assessment [hours,] to the blended students [who] may have considerable additional hours."
- Some of TIU's "total funding under the 'instruction category' is not attached to centralized students but rather supports instruction in other…ways [such as] statewide licenses used by all distance learners."

The Bureau of ABLE does not require agencies to disaggregate expenditures on DL instruction; however, it does maintain records on the estimated costs of educating DL students requested in agencies' proposals for funding. In 2007-2008, 53 ABLE-funded agencies requested funds for educating distance learners. Agencies estimated that they would serve 750 distance learners, with the average (mean) estimated expenditure per distance learner being $360.80.

Distance learning costs: Perspectives of ABLE-funded program staff members

One of the main costs incurred by DL is staff time. In some agencies teachers only taught DL students, but in most programs teachers provided both face-to-face and DL instruction. As such, the amount of time devoted to

DL varied weekly, depending on the number of students enrolled, students' learning needs, the frequency of communication with students, and the need for data entry and documentation.

Another DL cost is the purchasing of instructional materials such as workbooks, software, and annual site licenses for online curricula, as well as technology and computer hardware such as DVD players, DVDs, videotapes, computers, and laptops.

Programs using primarily print-based materials incur significant costs for postage and mailing supplies because they must send students workbooks, worksheets, videos, assignments, and other educational resources and provide self-addressed, stamped envelopes for students to return assignments and materials. For instance, one program spent approximately $500 per year on postage. For DL students without computer and Internet access, teachers must use the postal system. Preparing student mailings is also time-consuming for teachers.

Distance learning costs for non-ABLE DL providers

Three non-ABLE agencies reported that their total expenditures for DL activities in the last complete fiscal year were $1,200, $24,390, and $100,000. The fourth agency did not know the amount.

The estimated cost per student at the agencies ranged from $60 to $2,500.

When asked to compare the cost of DL provision to face-to-face (if offered by the agency), responses varied considerably and reflected differing delivery systems, instructional formats, teacher salaries, and related costs.

DL costs in other states

Getting consistent data across states was difficult, so the researchers obtained publicly available cost data for California and Ohio (figures have not been adjusted for inflation). According to the 2006-2007 applications to California's "Innovation Programs" for adult education distance instruction, the estimated average cost per learner per course varied from $97 to $2,298, with an overall statewide average of $485 and a median of $444 (Stiles and Porter, 2007). This wide variation in cost per distance learner is similar to the $60 to $2,500 range for the non-ABLE DL agencies that provided data for this study.

In 2005-2006 Ohio spent $293 per ABE/GED student, down from $738 in 2002-2003 (Project IDEAL, 2010). During this period enrollment tripled from 185 to 615. This accomplishment was attributed to the decision to start with a small, experimental DL program and then

to expand DL provision while using continuous evaluation to improve services. The Distance Learning Project's cost per student ($614-$688) is somewhat higher than the average for California ($485) and Ohio ($293). However, many adult education programs across Pennsylvania benefit from the DLP's financial support for distance education (e.g., site licenses, professional development). On the other hand, ABLE-funded DL provider agencies' average estimated expenditure per student ($361) is somewhat less than California's and slightly more than Ohio's.

DL costs for students

In Pennsylvania, ABLE-funded adult education classes, including GED courses via distance learning, are provided at no cost to students, and students are not charged for curricular materials. DL students are also provided with postage to send assignments to teachers, if needed. These students may incur costs for personal expenses such as long distance phone calls, transportation, or Internet.

The cost of GED preparation through other non-profit and for-profit DL providers, whether located in Pennsylvania or other states, varies widely. For instance, the online GED course offered by free-ed.net is free. Most of the popular DL providers identified by the research team and key informants, however, charge approximately $15 to $189 for GED preparation and $590 to $1,300 for adult high school diploma preparation. In general, online GED courses that provide instruction and tutoring assistance cost more than those that provide self-study materials with little or no instructional support.

Another cost for students is GED testing fees. In Pennsylvania, these are determined by each Test Center, ranging from approximately $50 to $100 for the complete test battery. Fees for individual sub-tests and retesting also differ across Test Centers. In 2009, one-third of all Test Centers nationwide provided free testing, 11 percent had varying fees, and 56 percent charged a set fee—$63 on average ($1 to $250). In addition, nearly 29 percent of Test Centers waived fees under certain conditions (GED Testing Service, 2010a).

Reasons for enrolling in DL
Staff perspectives

According to agency personnel, rural students enroll in DL mainly due to barriers to face-to-face class attendance, such as limited transportation, work-related reasons, child care and caretaking responsibilities, and the desire for privacy and confidentiality.

Staff members also noted that students select DL because budget cuts have reduced the number of face-to-face GED classes in rural counties.

Student perspectives

The most frequently mentioned reason students cited for enrolling in DL was convenience and flexibility, as they did not have to spend time driving to class and could fit

studying around their work schedules and other demands, such as caring for family. Students also cited their preference for studying independently or alone.

In some cases, students stated that DL classes were "available" or were the only option, and that the lack of transportation was a factor.

Advantages of DL for students
Staff perspectives

According to personnel, the main advantage of DL is that it expands access to education. A second advantage is intensified instruction as DL enables students to devote more hours to studying than face-to-face classes. Personnel said that increased instructional time also contributes to increased academic gains.

Personnel also said that DL helps students save money and work at their own pace, and allows teachers to individualize instruction.

Student perspectives

Students cited convenience, flexibility, and the ability to make their own schedule, study anytime or anywhere (especially at home), and to take care of other responsibilities while studying as the main advantages of DL.

Advantages of DL for agencies

Staff respondents viewed increased enrollment and retention as the main advantages of DL provision.

Staff believed that DL allowed students to continue studying if they were unable to attend class in person. DL also gave agencies the ability to offer students, who could not regularly attend face-to-face classes, another study option. And, by increasing students' instructional gains, DL enhanced agencies' ability to meet federal and state educational standards.[13]

Challenges and disadvantages of DL provision
Staff perspectives

According to staff, the most pervasive challenges and disadvantages related to DL provision were students' limited access to computers and the Internet; students' limited awareness of the availability and value of DL; student isolation; inadequate funding; the inability to maintain contact with students; the time required to provide high-quality DL; the ability to help students with time management; the level of course difficulty; delayed feedback for students; limited capacity of online enrollment; and difficulty motivating students.

Student perspectives

From the students' perspective, the most pervasive challenges and disadvantages were: delayed feedback and

---

[13] The National Reporting System for Adult Education requires adult education programs to show that learners have made gains on standardized tests such as the TABE.

limited access to teachers; difficulty in understanding academic subject matter; maintaining focus and interest; academic isolation; and confusing or redundant curriculum.

Conclusions
Types and use of DL

Data on DL use for GED preparation relative to the need for the GED credential indicate great potential for expanding distance education in rural Pennsylvania. During the period analyzed for this study (July 1, 2004 to December 31, 2008), only 4 percent (975) of all rural students in ABLE programs participated in DL classes—between 153 and 324 per year.

Approximately three-fourths of rural DL students participated in both DL and face-to-face instruction, likely because teachers tend to add DL to boost face-to-face students' academic skills and to provide additional study opportunities. Notably, without the distance option, the other 25 percent of rural DL students would have had little, if any, adult education instruction. In other words, for one in four rural DL students, distance education is likely the only viable study option.

Aside from ABLE-funded programs, only four organizations providing GED preparation via DL for rural students were identified. If other such agencies exist, the study participants, key informants, and adult education networks were not aware of them. Many rural GED candidates, however, study for the GED independently using workbooks, free online materials, GED websites, and other resources at their disposal.

The results show that in ABLE and non-ABLE programs, print-plus-computer is the most common instructional format, although video is also used. Computer-only was the least common format. This finding is consistent with national data suggesting that most candidates do not chiefly rely on computers or the Internet to study for the GED.

The programs in this study relied heavily on print materials, yet these have many disadvantages such as expense, preparation time, and delayed feedback. DL personnel would like to use more online resources that enhance academic instruction and student support. However, the cost of hardware and software for programs, coupled with limited student access to high-speed Internet and reliable computers, prevent many programs from taking advantage of innovative instructional technologies. Although ABLE teachers used myriad methods to communicate with and support students, and learners were generally satisfied with this support, the incorporation of more Internet tools would help alleviate frustration with explaining complex concepts using only one mode of communication, such as phone or print.

Data on student Internet access reveal that having high-speed Internet at home is a prerequisite for participating in DL through the Internet. That is, studying for the GED by using the Internet at another person's home is, as one staff member put it, "a recipe for failure."

Characteristics and participation of rural DL and face-to-face students

The demographic characteristics of rural GED DL students are typical of the life circumstances that are associated with low educational attainment and that make distance learning an appealing option. DL students are predominantly young, white women with a 10th grade education, with 10 percent having completed 8th grade or less. Moreover, distance learners are significantly more likely to be female and low income than face-to-face learners, whereas men are under-represented relative to their proportion of the Pennsylvania population without a high school education.

Rural DL students' average reading, math, and language scores upon program entry place them at the 6th to 9th grade level. However, blended students, who comprise three-fourths of all rural DL students, have slightly less formal education and lower academic assessment scores than do pure DL students. In addition, a substantial minority of rural DL students have a physical and/or learning disability. Together, these characteristics indicate a need for basic-level GED instructional resources via DL, especially for blended DL students.

About one in five rural DL students is a single parent, and more than one-third work full-time or part-time. Six in 10 rural DL students are considered low-income, and nearly four in 10 receive cash or in-kind assistance. Thus, the typical rural GED candidate will require various types of support to overcome economic and situational barriers to participate in DL and pass the GED tests.

Effectiveness of DL compared to face-to-face GED classes

The research showed that distance learning is just as effective as face-to-face classes in preparing students to pass the GED. In fact, the pass rate for rural Pennsylvania DL students is slightly higher than the national rate of 73 percent in 2008. DL students who obtained the GED credential tend to be younger, employed, and not disabled, and have fewer total instructional hours and higher educational assessment scores upon program entry. Comparison of pure and blended DL students revealed that assessment scores were the only significant predictor of passing the GED. These results indicate that more academically prepared students are ideal candidates for short-term, accelerated DL study.

Distribution of GED testing sites in rural counties

To take and pass the GED tests, rural DL students need to access testing sites. About three out of four rural Pennsylvania counties have at least one public GED testing site; however, one in four has none. These latter counties are ideal locations to add addendum sites or Test Centers.

Cost of DL provision

Although precise data on cost of DL provision were not available, estimates from Pennsylvania and other states are informative. The average estimated cost per distance learner in ABLE-funded provider agencies' funding proposals was $361. Estimated costs for non-ABLE agencies varied from $60 to $2,500 per student—similar to the range reported by California DL programs (Stiles and Porter, 2007). In California (2006-2007) and Ohio (2005-2006), the average cost per DL student was $485 and $293, respectively. In sum, the estimated cost per student in Pennsylvania is consistent with other states.

Advantages of DL for students and agencies

According to ABLE DL learners and program personnel, students' primary reasons for enrolling in DL include accessibility (e.g., no need to travel); convenience and flexibility; the ability to fit GED study with employment, childrearing and caretaking, and other life demands; preference for independent, self-paced learning; and the desire for privacy or confidentiality. The perceived advantages of DL for students are similar. From the perspective of instructors, DL affords rural GED candidates with more options to pursue educational credentials—in some cases, their only option. DL also enables blended learners to study outside of class and, as such, increases academic growth—a view that is supported by quantitative data on blended DL students' educational gains. For students, DL provides much-needed convenience and flexibility and allows them to combine GED study and employment, to study "at their own pace," and to maintain confidentiality, which is especially important for those who are ashamed of dropping out or who have social anxiety. These advantages of DL correspond closely to the characteristics of DL learners cited above, including poverty, single motherhood, and part- or full-time employment.

DL also affords various advantages for educational agencies, including increased enrollment, student retention, and performance on federal and state program accountability standards (e.g., educational gains, percentage of students meeting goals), as well as more instructional formats to offer students. In short, DL can enable agencies both to enhance student learning and to comply with program performance requirements.

Challenges and disadvantages of DL provision

Despite the potential of DL, it also has limitations for students and educational providers. As noted earlier, most DL students have restricted computer and Internet access. Student and program use of online GED resources depends on the availability and affordability of rural broadband and computer technology. In addition, agency staff members cited limited awareness of DL's existence and value as a constraint. Programs also lack adequate funding for DL, an instructional format that requires the investment of financial resources and staff time. Program personnel identified challenges such as communication with students, delayed feedback on assignments, and student struggles with isolation, time management, and difficult course material. Each of these issues, as well as maintaining interest and focus and specific curricular concerns, was also mentioned by students. For distance learners, accessing timely help and support from instructors is the most difficult aspect of DL, especially for those using print. These results underscore the importance of having access to an array of technologies (in addition to phone, e-mail, and postal mail) that allow students and teachers to contact each other and teachers to provide adequate, timely explanations of GED subject matter.

References

Askov, E., J. Johnston, L. I. Petty, and S. Young. (2003). Expanding Access to Adult Literacy with Online Distance Education. Cambridge, MA: National Center for the Study of Adult Language and Learning.

Bureau of Adult Basic and Literacy Education (2009). Adult Basic and Literacy Education Data Collection Glossary, 2009-10. Harrisburg, PA.

By the Numbers (2007). Distance Learning Survey. State College, PA.

Distance Learning Project (2010a). Developing Your Own Supplemental Distance Learning Lessons. Retrieved May 27, 2010, from http://sites.google.com/a/tiu11ces.org/supplementaldllessons/.

Distance Learning Project (2010b). Distance Learning Evaluation Survey 2008-2009. Lewistown, PA.

eLearnVA (2010). Blogs. Retrieved May 21, 2010, from http://www.elearnva.com/blog.

Fleischman, J. (1998). Distance Learning and Adult Basic Education. In C. E. Hopey (Ed.), Technology, Basic Skills, and Adult Education: Getting Ready to Move Forward (Information Series No. 372) (pp. 81-90). Columbus, OH: ERIC Publications on Adult, Career, and Vocational Education, Ohio State University.

GED Testing Service (2004). Virginia Expands Race to GED Program. Retrieved May 21, 2010, from http://www.acenet.edu/AM/Template.cfm?Section=Search&template=/CM/HTMLDisplay.cfm&ContentID=20303.

GED Testing Service (2007). Kentucky, Texas and Utah Educators Honored with Achievement Awards by the GED Testing Service. Retrieved May 17, 2010, from https://www.acenet.edu/AM/Template.cfm?Section=Search&template=/CM/HTMLDisplay.cfm&ContentID=23024.

References (continued from Page 17)

GED Testing Service (2009a). 2008 GED Testing Program Statistical Report. Washington, DC.

GED Testing Service (2009b). GED Testing Service Research Quick Facts (2009). Washington, DC.

GED Testing Service (2010a). 2010 Test Center Profile. Unpublished Raw Data. Washington, DC.

GED Testing Service (2010b). Bridges to College: Transitional Programs for GED Earners. Retrieved May 18, 2010, from http://www.acenet.edu/AM/Template.cfm?Section=GED_TS&Template=/CM/HTMLDisplay.cfm&ContentID=29998.

GED Testing Service (2010c). Online Programs Offering Unauthorized GED Credentials. Retrieved May 17, 2010, from http://www.acenet.edu/Content/NavigationMenu/ged/etp/pros/NAAG_File.pdf.

GED Testing Service (2010, March). The Community: A Newsletter for GED Testing Professionals and Adult Educators. Retrieved May 14, 2010, from http://www.acenet.edu/Content/NavigationMenu/ged/etp/pros/The_Community_0310.htm.

Keystone Research Center (2008). The State of Rural Pennsylvania. Retrieved July 15, 2008, from http://www.keystoneresearch.org/ruralpa/index.php.

Means, B., Y. Toyama, R. Murphy, M. Bakia and K. Jones. (2009). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. Washington, DC: U.S. Department of Education.

Office of State Budget Director (2003). Public Policy Initiatives of Governor Paul E. Patton. Frankfort, KY.

Office of Vocational and Adult Education (2008). Distance Learning Policy Guidance. Washington, DC.

Pennsylvania Department of Education (2008). Public School Dropouts by County, 2005-06 Retrieved July 14, 2008, from http://www.pde.state.pa.us/k12statistics/lib/k12statistics/0506PDropinPAT8.pdf.

Pennsylvania Partnerships for Children (2010). Dropping Back In: Re-Engaging Out-of-School Youth. Harrisburg, PA.

Porter, D. (2004). California's Experience with Distance Education for Adult Basic Learners. Adult Basic Education, 14(3), 135-152.

Project IDEAL (2010). A Success Story in Ohio. Retrieved April 20, 2010, from http://www.projectideal.org/distance_in_action/action_1.html.

Sebastian, R. (2007). eLEARN Virginia: A New E-Learning Program for Adult Virginians in Need of GED and Workplace Education. Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications, Chesapeake, VA.

Stiles, R., and D. Porter. (2007). The California Adult Education 2005 - 2007 Innovation and Alternative Instructional Delivery Program: A Review. Dominguez Hills: California State University Dominguez Hills College of Extended and International Education.

The Center for Rural Pennsylvania (2003, July/August). Newsletter. Retrieved July 15, 2008, from http://www.ruralpa.org/news0703.html.

The Center for Rural Pennsylvania (2008). How Are You Connected? Harrisburg, PA.

Tucho, A. E. (2000). Factors Influencing the Successful Completion of the General Education Development (GED) Program at Community College of Philadelphia as Perceived by the GED Students. Unpublished doctoral thesis, Temple University, Philadelphia, PA.

U.S. Census Bureau (2008a). 2006-2008 American Community Survey 3-Year Estimates. Table C14005. Retrieved August 2, 2010, from http://factfinder.census.gov/servlet/DTTable?_bm=y&-state=dt&-context=dt&-ds_name=ACS_2008_3YR_G00_&-mt_name=ACS_2008_3YR_G2000_C14005&-tree_id=3308&-_caller=geoselect&-geo_id=04000US42&-search_results=01000US&-format=&-_lang=en.

U.S. Census Bureau (2008b). 2006-2008 American Community Survey 3-Year Estimates. Table C15001. Retrieved August 2, 2010, from http://factfinder.census.gov/servlet/DTTable?_bm=y&-state=dt&-context=dt&-ds_name=ACS_2008_3YR_G00_&-mt_name=ACS_2008_3YR_G2000_C15001&-tree_id=3308&-redoLog=true&-_caller=geoselect&-geo_id=04000US42&-geo_id=NBSP&-search_results=01000US&-format=&-_lang=en.

U.S. Census Bureau (2008c). 2008 American Community Survey 1-Year Estimates. Selected Social Characteristics in the United States: Pennsylvania. Retrieved August 2, 2010, from http://factfinder.census.gov/servlet/ADPTable?_bm=y&-context=adp&-qr_name=ACS_2008_1YR_G00_DP2&-ds_name=ACS_2008_1YR_G00_&-tree_id=308&-_caller=geoselect&-geo_id=04000US42&-format=&-_lang=en.

U.S. Department of Education (2006). Enrollment and Participation in the State-Administered Adult Education Program. Retrieved July 31, 2008, from http://www.ed.gov/about/offices/list/ovae/pi/AdultEd/aedatatables.html.

United States Distance Learning Association (2008). DL glossary. Retrieved July 31, 2008, from http://www.usdla.org/html/resources/dictionary.htm.