Online Learning for Low Skill Adults

Heather McKay with Dr. Mary Gatta
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The Center for Women and Work

The Center for Women and Work (CWW) is an innovative leader in Research and Programs that promotes gender equity, a high skill economy, and reconciliation of work and well-being for all. CWW is located in the School of Management and Labor Relations at Rutgers, The State University of New Jersey. The CWW houses the Sloan Center on Innovative Training and Workforce Development (ITWD). The ITWD is dedicated to assisting state, county, and city government Departments and Workforce Investment Boards institutionalize technologically-based flexible education and training alternatives, especially online learning opportunities, for non-college educated workers throughout the nation. More information can be found at www.cww.rutgers.edu.

The Communications Workers of America

The Communications Workers of America (CWA) is the union for the Information Age, representing 700,000 workers in communications, media, airlines, manufacturing, and public service. CWA sponsors speedmatters.org, a campaign to bring high-speed Internet to every American. CWA can be found online at http://www.cwa-union.org and Speed Matters can be found at http://www.speedmatters.org

Introduction

Education is widely understood to be the key to moving low-skill adults into jobs that pay wages that meet family needs and enable families to be self sufficient. Yet many existing educational credential programs do not take into account the multiple constraints faced by low-skill adults who hold jobs and must also care for children or other family members. Rigid course and program schedules, combined with irregular work hours, lack of access to transportation, and classes that are not locally available make it difficult for many adults in low-paid jobs to find programs that meet their needs. Many of these adults are excluded, either by design or default, from participation in educational opportunities that could improve their economic status.

Online learning offers a viable solution to the barriers that exist in accessing traditional classroom based education. Utilizing the computer and the Internet, adult learners are able to access the education and skills training required, securing economic self-sufficiency and moving beyond entry-level jobs. This approach can be tailored to many different demographic groups and has proven to be a successful delivery mechanism for a variety of populations including low-income workers, veterans, Native Americans, rural Americans, displaced homemakers, incarcerated individuals, the disabled, domestic violence victims, as well as others. For these groups online learning successfully alleviates many of the problems associated with classroom based educational options such as family demands, geographic location, work schedules, racial and ethnic differences and transportation inequities. The utilization of online learning is most effective when it allows for flexibility and recognizes the various roles that adult learners play in their complex lives. Many adult learners may be students, workers, or caregivers at the same time, and as result their learning must fit into the framework of the reality of their lives.

Research shows that 46 percent of Americans lack the literacy skills necessary to succeed in today's high-tech labor market (Kutner et al 2006). Despite this, it is estimated that only 10 to 20 percent of the 37 million Americans who require basic education and skills training to successfully integrate into the workforce are enrolled in Federal or State supported programs at any time (McCain, 2003). More complete integration of online learning into the adult educational system would help to increase the number of learners enrolled. Traditional classroom based learning places limits on enrollment due to cost, instructional staff, and facility space. In addition online learning offers flexibility in time and space allowing students to take classes around their work and family schedules and individualize their program material. Learners also have a greater array of course options available to them online and may even be able access training that is not locally accessible in a classroom setting, this is especially important when learners are seeking to tie their training to high-wage, high-demand occupations. With the range and power of the Internet, online learning offers a convenient and relatively inexpensive way to deliver education to working adults.

Delivery of online coursework is not a new concept; universities throughout the country have successfully employed online learning for decades.[1] More recently this concept has been adapted by the workforce system. This paper provides an overview of the challenges that low-

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[1] For a comprehensive analysis of the effectiveness of online learning in colleges, along with a database of seminal research on this topic, see the Alfred P. Sloan Consortium at www.sloan-c.org

skill adults face in attaining education via traditional mechanisms and demonstrates the effectiveness of online learning in addressing these barriers. The Sloan Center on Innovative Training and Workforce Development (ITWD) at Rutgers University has been working with the Alfred P. Sloan Foundation to develop online learning skills training and credential programs for low-skill working adults since 2002. This initiative has provided leadership and conducted research on the development and implementation of online learning programs in our nation's workforce delivery system, resulting in programs in over 21 states. For the most part these initiatives have been developed and studied by the ITWD and are credential-based training programs tied to high-wage, high-demand jobs. The use of online learning as a workforce development tool began with a pilot program which studied low-skill full time working mothers in New Jersey, who participated in online training through the state's workforce development system. (Gatta, 2005) Participants, on average, were 32 years old, earned $16,900 annually, were high-school educated, and had two children. Participants were studying part-time while juggling work and family demands.

Participants in New Jersey's online learning program were provided with a laptop computer, printer, over 300 courses, and Internet access. As discussed more fully below, the program was most successful where participants had high speed Internet access. High speed Internet access is a major challenge in delivering successful online learning programming. High-speed broadband[2] access is essential to the effective delivery of online skills training and education; yet for many Americans access to high-speed broadband Internet is still not a reality. This not only affects the online coursework available to individuals, but can also serve to widen the "digital divide" among Americans.[3] Several experts including William Kennard, the chairman of the Federal Communications Commission from 1997 to 2001, have referred to the disparities in broadband access as the "new digital divide." This concept suggests that what is significant is not whether people have access to the Internet, but rather what "type" of access – dial-up or broadband – they have. The type of access that learners in online programs have to the Internet has been shown to be critical to the continuation of students in their online learning programs (Gatta, 2005).

Drawing on existing programs throughout the United States, this paper will provide information on strategies and characteristics of successful programs that seek to improve skills for low-skill workers employed in low-paid jobs. The focus is on ways to help working adults attain credentials that can, among other things, provide bridges to further education and postsecondary degrees; be tied to locally-demanded skills and occupational certifications; provide basic skills and technology training; and serve as a complement to work-based and other forms of training. Specifically this paper will:

- Detail the barriers low-skill adults face attaining skills training and education via traditional venues, and demonstrate how online learning options can address these barriers.
- Provide examples of online learning programs for low-skill adults throughout the country provided in the public workforce system, and detail successful

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[2]Broadband is defined as being a high-speed communications network.

[3] Digital Divide refers to the gap between those people with access to Information Technology and those without.

characteristics of those programs.
- Examine the obstacle of limited access to broadband in the United States to the successful delivery of online education and skills training.

Adult Students' Barriers to Classroom Training

In order for the United States to remain competitive in the global economy American workers must possess the necessary skills demanded in the labor market today. A 2003 study by the National Assessment of Adult Learning (NAAL) found that nearly half of all Americans do not possess the necessary literacy skills required to obtain self sufficiency in today's labor market. As such, it is important that these Americans are able to access the tools necessary to upgrade their workforce skills[4] As has been stated these types of skills are commonly delivered through traditional classroom based delivery, and for reasons of access, cost, and inflexibility only a small portion of the 37 million Americans who require this training are receiving it.

Traditional barriers to this bricks and mortar style of learning include its inflexibility. For the most part low-wage workers in America are females with care responsibilities (Hartmann and Rose, 2004). Traditional classroom-based learning presents formidable barriers which prevent many women from being able to take advantage of the educational offerings. One of the most common challenges faced is scheduling. In order to attend classes to upgrade skills sets adult learners must have access to affordable childcare at nontraditional hours such as nights and weekends (Edin and Lein, 1997; Johnson, 2002; Gatta, 2008). Locating childcare during the night and weekend hours when many classes are offered can prove to be daunting. Scheduling conflicts also arise between class offerings and work hours. Many low-skill Americans work in the service sector or similar sectors where inflexible scheduling conflicts with classroom based educational courses. Adult learners often find it difficult to manage educational, family and work demands within the constraints of typical academic semesters (Gatta, 2005).

Surveys indicate that a further barrier and one of the main concerns in pursuing education for adults is financing (Flint and Frey, 2003; Gatta, 2008). Many adult students study part-time, and as a result do not qualify for federal and state financial aid (Gatta, 2008). Available scholarships serve traditional age students and those residing at educational institutions. Part-time students in most states have no access to state-funded aid, and available funding for part-time students is often not accessible to low-income workers due to stipulations tied to the funds. Federal work study programs require students to work twenty hours a week, which can be impossible for adult learners who are already employed. Perkins loans are only available to full-time students, and Stafford loans are only available to students taking six credits or more. Federal Pell grants can be utilized for part-time students, but this funding is generally the only source available, and is often inadequate. In addition many low-skill adults utilize this funding for remedial coursework and then find that there is no available funding stream to support them through post-secondary education. Funding streams for post-secondary learning are often

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[4] For more detailed description of literacy and workforce development see Appelbaum, et.al -2007

difficult to navigate and many of these streams are not accessible to low-wage students with work and family demands.

Publicly supported workforce programs for skills training and education can utilize existing federal and state education dollars through government agencies to provide computers, printers, Internet access, and courses for low-skill adults. State agencies can utilize training dollars in a variety of funding sources including Food Stamp and Training dollars, Career Advancement Vouchers, TANF funds, dislocated workers funds as well as others. Funding streams for online learning for low-income workers vary by state, but the United States Employment and Training Administration has recognized technological equipment purchases as an allowable expense from Workforce Investment Act training dollars. Utilizing these existing funds and offering coursework online allows students to acquire the basic skills they require without tapping to funds which could support them through post-secondary learning.

Finally, transportation can also act as a considerable hurdle to accessing traditional education (Gatta, 2005). Many low-income families in the United States do not possess a car, this is an especially relevant fact when looking at the 1/3 of all American households who earn less than $15,000 annually (Van Horn and Schaffner, 2003). Many of these low-income Americans reside in suburban and rural communities with limited public transportation, and as a result are unable to physically access traditional educational courses (Gatta, 2005). Transportation is hindered even for those low-income families that own a car as the high price of gasoline has made travel costs too expensive for many household budgets.

Why Online Learning for Adult Learners? Flexibility, Access and Cost Effectiveness

Successful online learning requires discipline and self motivation, and as a result may not be an appropriate method of skills delivery for all adult learners (Gatta, 2005). Despite this fact, online education can be advantageous for adult students and their families, as it offers flexibility in time and space and is often cost effective for both participants and providers. Online learning allows students to work at their own pace, and to log on to their coursework at times during their daily schedules that are most convenient to them. In the New Jersey pilot program the learners logged onto their coursework late at night when other family members were sleeping. When utilizing online learning adult learners save both time and money on childcare and commutation, because they are able to access their education via technology in their homes (Gatta, 2005).

Accessing education and skills training via technology is beneficial for adult learners, because it introduces them to IT skills beyond regular course content. Familiarity with technology, specifically the computer and the Internet is imperative to being successful in today's high-tech economy. By accessing their coursework via technology individuals are able to increase their facility with technology and the Internet, learn how to troubleshoot problems that may arise, and improve their typing skills (Gatta, 2005). These benefits have been shown to extend beyond the adult learner and increase technological literacy in families as a whole (Gatta, 2005). Making a computer available in the homes of low-income Americans helps to bridge the digital divide for both adults and children. Alleviating this disparity in technological access helps

to improve technological literacy and prepare low-income Americans with the skills necessary to succeed in the workforce today.

Potential Obstacles for Low-Skill Adult Learners and Online Learning

As mentioned previously, online learning is a promising tool for expanding access to education for low-skill-adults, but it is not for everyone (Gatta, 2005). As a result it is important to understand the potential obstacles low-skill adults may face in online learning environments, as well as the elements that are essential to a successful online learning experience for adult learners (Gatta, 2005).

Research demonstrates that successful online learning experiences require self-motivation and self-discipline (Bird and Morgan, 2003; Thorpe, 1987). For adult learners this often means navigating a balance between work, family and educational demands and managing time effectively (Gatta, 2005). In addition to simply managing their daily schedules and carving out time in their day for learning, research shows that adult learners must also balance their education in relation to the feelings of their family members. (American Association of University Women, 2001). Adult learners often feel pressured by family members who perceive them as shirking their familial responsibilities.

Successful experiences can be achieved by helping adult students to cope with and alleviate these stresses. This can be accomplished by outlining learning schedules and objectives prior to enrollment and by revisiting these throughout the learning experience (Gatta, 2005). It can also be helpful to reach out to employers and encourage flexibility on their part. It is crucial to inform adult students about the potential barriers they may face in online learning programs and the probable time and resource conflicts they may encounter during their training prior to enrollment (Gatta, 2005).

Another way to help online learners succeed is by limiting feelings of isolation. Since research shows that learning only 'online' for many people can sometimes be a lonely experience. These feeling of isolation can be circumvented by providing human interaction as a part of the learning experiences. A blended model of learning which combines online coursework with either in-person or online meetings is one method that has proven successful (Gatta, 2005). Learners get the opportunity to interact with instructors and other students like them, and as a result a community of learners is created. Students can share problems, experiences, struggles and successes, and can help each other to find solutions and celebrate the learning experience. In addition in-person meetings also help to facilitate communication between learners via technology, which can help to limit feelings of isolation that may arise as the learner is at his or her computer.

In addition to educational and life concerns online learners must also cope with the problems associated with technology and their own familiarity. As has been mentioned many low-wage Americans are inexperienced with technology as a result of the digital divide. As such it is important to make sure that learners possess the basic skills necessary to utilize computers

and navigate the Internet. Research demonstrates that in-person computer and Internet orientation sessions are the best way for online learners to develop a general familiarity with computers and the online environment (Gatta, 2005). Once oriented to the computers online learners may still experience some kind of technological problem. These problems most commonly include troubles with hardware, software, networks and slow Internet speeds (Gatta, 2005). In order to minimize technical problems and any associated anxiety, it is important to develop and implement a clear technical assistance plan, with a key unit or person that students can contact when problems arise (Gatta, 2005).

Another technological problem, which often serves as a hindrance to online learners is Internet speed. Students in many programs experience frustration, loss of valuable time and difficulty when accessing their online learning programs via low speed Internet connections such as dial-up. Research shows that adult learners with low speed connections become frustrated when trying to download applications and waiting for pages to load in their educational content (Gatta, 2005). Low speed Internet connections also limit the array of educational content available to students to purely text-based coursework. Content with audio, graphics and video requires fast Internet speeds for access.

Examples of Online Programs for Low-Skilled Adults

The use of the Internet as an education and skills delivery mechanism has increased dramatically in the last decade. The number of students in online educational programs increased from 710,000 in 1998 to over 3.5 million students in 2006 (http://www.sloan-c.org). While the vast majority of these learners are pursuing post-secondary education, this is not the only group that can benefit from online course delivery. Hundreds of successful pilot programs have demonstrated that online learning is successful as a training delivery system for low-skill, low-wage individuals. This section provides examples of programs utilized in the United States public workforce and education systems.

In New Jersey fourteen of the twenty-one counties have implemented online learning as a training mechanism for low-income workers. These programs are centralized within the state's One-Stop system, and although the exact parameters vary there are similarities among them. All participants enrolled must be employed with an income at or below 250% of the poverty level. In addition each participant must have at least one child under the age of 18 living at home. Available coursework is tied to local high-wage, high-demand jobs. In New Jersey these include information technology, healthcare, cable telecommunications, paralegal, entrepreneurial studies, project management, and medical billing. Additionally, all programming in New Jersey utilizes a blended model, where students meet in person for an orientation, to provide familiarity with the computers and the Internet and meet other learners. Learners then reconvene for monthly meetings to share experiences. The success of online learning as a skills delivery mechanism in New Jersey was documented through a pilot project for 128 single working poor mothers. Of those enrolled in the program 92 percent completed it, and those participants experienced an

average 14 percent increase in their annual wages (Gatta, 2005).. Additionally, 15 of these women went on to pursue post-secondary education (Gatta, 2005). [5]

Texas has also implemented a successful online learning program for low-wage adults through the workforce investment board system. The individuals enrolled in the Texas initiative are generally either current or former welfare recipients. Since its implementation 4,000 workers have utilized online learning as their only source of job training and education (Gatta, 2005). These participants earned about $4,005 more on average annually and 84 percent of participants were able to successfully transition off of public assistance, these results are far higher than any other workforce training programs in the state (Gatta, 2005).[6] Many other states also have significant online learning programs. Massachusetts piloted an online learning project for low-wage workers and one year out participants received an average 11 percent wage increase. Other states have also had success including: Alabama, Arizona, Colorado, Delaware, District of Colombia, Illinois, Maine, Michigan, Pennsylvania, and South Carolina (Gatta, 2005).

Online and computer-based learning initiatives are also currently being utilized with other demographic groups. Currently, a pilot project in the state of New Jersey is utilizing computer-based learning (CBL) to help incarcerated women develop the skills they need to secure a job upon release from prison. The program is based on incarcerated women's natural 'trajectory of release' from prison.[7] It begins with the incarcerated women taking education and training courses via a special prison-dedicated learning system on a desktop computer. These courses are provided by a computer hardware and software vendor at a maximum security prison facility in New Jersey. Next it follows the women over to an assessment center, where they have a CBL lab with desktop computers to continue their training; and it is then available to women in a CBL lab with laptop computers as they move to a group halfway house. At this halfway house the women both begin employment (through different work release programs) and also make connections with a local community college and the New Jersey Department of Labor and Workforce Development's One-Stop System. Once students are connected with the New Jersey One-Stop system they may be eligible to continue their computer-based education and training through online courses on a personal lap-top via the State's online learning program.

Successful online learning programs have also been implemented with many other groups including returning veterans, Native Americans, recent high-school drop-outs, displaced homemakers and recently, disaster victims. In addition, online learning was utilized as a training tool for victims of Hurricane Katrina and Rita.

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[5] For a more detailed description of the New Jersey online learning pilot see Gatta, 2005

[6] According to the Dallas Workforce Board

[7] The "natural trajectory" of the program is the ideal model, but the research thus far has demonstrated that this path is not always straight forward. There are many different routes that offenders can take in their transition from prison to community. For instance offenders may go directly to the community from either the prison or the assessment center, they may not connect with the One-Stop and continue their learning upon entry into the community, and they may even return to one of the three correctional institutions. The system of reentering society following incarceration is often a complicated one which involves many variables, and as a result each inmate's path to the community varies.

Improving Online Education

Despite this growth in the use of computers and the Internet to deliver skills training, serious limitations remain. One of the major challenges to this technologically-based education is the speed of Internet access. The study by Rutgers University of a New Jersey based pilot project found that the speed of the Internet connection was a very important component in the effective completion of coursework by learners. The majority of participants in this study connected to the Internet via a dial-up connection. Accessing the Internet in this manner presented many problems for participants including the process of "dialing up" to the Internet, the slow loading of websites and other Internet content (especially for pages with graphics), and the frequent and easy disconnections (Gatta, 2005). These instances proved to be frustrating for the participants and many times would act to discourage them from their coursework. For the participants in the New Jersey program some of these problems were alleviated through either DSL or cable modem connections which were preferable to the dial-up connection, but are certainly not the most desirable alternative to facilitate successful online learning experiences. Research has demonstrated that people with available broadband access are more likely to utilize the Internet to connect to information and take courses, and through this frequent use become more familiar with the technology thus helping to close the digital divide. While 62% of households with incomes over $100,000 have access to broadband only 11% of Americans who make less than $30,000 utilize broadband (www.speedmatters.org). This disparity in broadband access for low income individuals is problematic and increasingly effects women, minorities, and rural Americans.

What constitutes high-speed Internet varies. For instance the FCC defines 768 kilobits per second (kbps) as high speed, but this capacity is too slow for many Internet applications including video conferencing. Other industrialized nations with broadband policies are establishing goals of 100 megabits per second (mbps) for both download and upload speeds. Currently the United States ranges from 1 to 3 mbps download and a much slower 50-384 kbps upload. Policy recommendations by the CWA suggest that by 2010 the United States should adopt an initial national goal for creating an infrastructure which would support 10 mbps download and 1 mbps upload. The debate on what constitutes "high-speed" Internet persists, but it is clear that speeds beyond the capability of dial-up are essential to supporting the content of online learning courses. Broadband also offers the benefit of enhancing online learning course curriculums by providing the capacity to support communication between learners and contact with teachers through voice, data and video sharing. High-speed Internet access helps to facilitate successful online learning and will also improve the competitiveness of the United States economy. According to the Organization for Cooperation and Development (OECD) the U.S. currently ranks 15th among 30 nations in their broadband rankings, which look at household penetration, speed and price.[8] Other countries including Hong Kong, China, the Netherlands, Denmark, Canada, Japan and Singapore, all outpace both broadband speed and access in the United States (Turner, 2006). Broadband policies are needed to ensure that broadband access is universal, high-quality and affordable, this agenda would benefit low income individuals and

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[8] For more information please see http://www.oecd.org/sti/ict/broadband.

improve the availability and quality of training and education available to them. It will also improve the ability of the U.S. to compete in the global marketplace.

While high-speed access alone will not address the inequities in skills training, it is associated with more frequent and sophisticated Internet use, indicating that a positive spillover effect of broadband access is increased technological skills. Broadband access can help to facilitate online education and job training programs. It allows learning to be more interactive and to employ video streaming and conferencing. It is easier to navigate and use, learners do not have to "connect" to the Internet nor does the learner have to endure long and often frustrating waits for web pages and content to load. The online learning experience is enhanced via broadband access and research has demonstrated that individuals who utilize broadband for their learning are more likely to continue their online coursework.

Characteristics of Successful Programs

Online learning programs for low-skilled adults can be developed and implemented by a variety of organizations: state and local governments, community colleges, faith based organizations, community based organizations, and so on. Regardless of which organization provides the training or education program, several important characteristics of the structure and content of a program can make success for low-income students more likely. The following "lessons learned" have been compiled by the Sloan Center on Innovative Training and Workforce Development under the direction of Dr. Mary Gatta and can aid in the development and implementation of online programs for lower-skill adults in workforce programs and also in community college credential and degree programs.[9] (For a more detailed discussion, see Gatta, 2005)

> ➤ *Develop an accurate and complete understanding of opportunities and challenges of online learning for both the student and teacher.* Stakeholders must share a common understanding of what it means to offer and participate in online learning courses for adult students. Obstacles that may arise and the solutions to these barriers must be understood by both students and instructors. Students must be aware of the fact that online delivery does not equate to less labor intensity. Delivering skills training and education via computers can be a radically different idea for both instructors and students, so expectations must be made clear so that desired outcomes can be met. Students may benefit from taking a "demonstration" course prior to beginning a full skills training curriculum in order to assess whether online learning is the right educational tool for them.(Gatta, 2003)

> ➤ *Provide adequate student supports. Online learning can be a challenging and labor intensive form of learning.* Some online programs may have a teacher

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[9] This section draws on the best practices outlined in *Findings From the Field: Early Findings from the New Jersey Online Learning Project for Single Working-Poor Mothers* by Dr. Mary Gatta.

directing class work and training, while others may be self paced programs. For those students involved in self paced programs it is important to provide an easily accessible support system so students can get help as needed with content, technical and other questions as they arise throughout their learning experience. This support is best when provided both online and in person, but minimally support should be accessible by phone. (Gatta, 2003)

➢ *Provide flexible schedule options.* Adult learners must balance their education with many other demands on their time such as work and family. In light of this it is important that learning schedules can be crafted in a flexible manner so that education works within other life needs. Multiple entry and exit points help to facilitate this flexibility and eliminate the barrier of the typical and rigid semester system.(Flint and Frey, 2003; Mancuso, 2001). Self-paced course options also offer flexibility for learners, and allow them to accelerate or slow down their training as needed (Gatta, 2003).

➢ *Provide an orientation.* Preparing adult students for online learning via an orientation process and making other resources available to them is a very important component of a successful learning experience. (Flint and Frey, 2003).

➢ *Provide a flexible "blended model" of learning.* Research shows that adult participants in online learning programs report that coupling their online coursework with in-person meetings helps to keep them motivated, on task, and part of a community of learners. This face-to-face component of a program also helps teachers to maintain contact with students, and as a result be aware and find solutions to problems (Gatta, 2003).

➢ *Develop a comprehensive assessment of potential applicants.* Online learning requires skills such as time management, self-discipline and motivation, and as a result is not the best learning environment for all people. Students may benefit from having some working knowledge of computers. As a result it is helpful to administer a comprehensive assessment of potential candidates so that it can be determined whether the client will be best served by online learning or other services. Learners must determine: how they will fit online learning into their daily lives; whether their coursework selections are associated to their skill level and their employment goals; their personal comfort with the idea of online learning. In addition it is important that learners possess a minimum of a sixth to eight grade reading level, as much online coursework is text based. (Gatta, 2005). Finally, having a basic working knowledge of computer skills, along with a basic understanding of the Internet, will help to make the transition to online learning smoother (Gatta, 2003).

> *Ensure that equipment is flexible.* Laptop computers offer online learners greater flexibility in accessing their learning. With laptops students learning can travel to work, homes of friends and family members and also throughout their own homes with their computers. Speed of Internet connection is also important in an online learning program. Providing access to high-speed Internet connections helps to improve the online experience, and decrease participants' frustrations with online learning (Gatta, 2003).

> *Develop an awareness of different participants' learning styles.* Research demonstrates that when accessing online education students learn in different manners. Some find that they learn better with hard copy manuals and study guides. Traditional materials like books are useful, because they allow students to study at times when they may not be able to be online. They also help to reinforce concepts and provide further assistance in the learning process. In addition to having an off-line component of training it also helps to incorporate online variation in training through audio and visual components such as graphics or video content. These tools can also help to increase comprehension and retention (Gatta, 2003).

> *Provide comprehensive monitoring.* Monitoring is very useful in helping to keep students on track with their learning, as well as highlighting and addressing problems and obstacles as they arise. Many vendors and educational providers incorporate monitoring of time online, courses completed and scores in their platforms. This process can help to ensure student accountability, and is especially useful in self-paced coursework (Gatta, 2003).

> *Provide a high-speed Internet connection.* Internet speed is essential to enable online content that moves away from reading-intensive, text-based instruction and takes full advantage of the audio, visual and interactive capabilities of the Internet. Internet speed has been shown to be related to successful completion of online learning programs. Providing students with broadband access will make them more likely to utilize the available technology and develop improved technical skills.

Conclusions

Using online learning to deliver post-secondary education or skills training leading to certification or an associate's degree to low-skill adults is a viable option within our nation's workforce and education delivery system. Utilization of the Internet and personal computer in the delivery of such programs is most interesting for workforce development specifically because of the ways these technologies promote flexibility and access to education and job training for groups of individuals, especially low-skill adult workers that previously were excluded or marginalized by the education and workforce development systems. Success of such education and training programs is furthered when low-income individuals have high speed broadband

access to the Internet that is convenient to use, flexible and high-quality. Indeed as educational programs continue to be developed and technology continues to be enhanced, the flexibility offered by online learning will help to democratize access to training and education for adult learners and will help to raise low-skill workers out of entry level jobs and onto a career pathway with sustainable self-sufficiency earnings.

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