

Note: There is an [accompanying slide show](#) representing a shortened (45 minutes) presentation based, for the most part, on the following paper. Suggestions as to when to view each accompany slide (in a PDF format) is shown with the slide number in brackets and left justified.

[slide 1]

How the Internet is Changing Self-Directed Learning

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Paper Presented at the Annual Regional Conference
Best Western Albany Airport Inn, Albany, NY April 20-21, 2009

[NOTE: Some of the material used is updated from Hiemstra, 2006]

Introduction

[slide 2]

The Internet's growth in the past few years has been rapid. For example, the World Wide Web's first site was posted in December of 1990. There were only 10 sites by the end of 1991, 50 by the end of 1992, and about 6000 sites worldwide when I initiated my own web site in 1994. Today there are more than 185 million web sites with about 75 million of them active according to Netcraft, an Internet services company based in England (Netcraft, 2009).

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As of June, 2008, the U.S. had over 220 million Internet users with that amount no doubt much larger today (Miniwatts International, 2009). Worldwide there are some 7 billion Internet users with 298 million just in China, the fastest growing Internet using country.

The Center for the Digital Future at the University of Southern California (USC) has systematically studied the Internet's growth. They reported the following in 2008 over an eight year period: (a) 80% of Internet users (17 and older) consider the Internet an important source of information (up from 66% in 2006), higher than TV, radio, and newspapers (as we can see with how fast newspapers, for example, are changing or even disappearing); (b) the number of hours online per week continues to increase, rising to an average of more than 15 hours each week, with email the most favorite use; and (c) more than three-

quarters of home Internet access was via a broadband connection, an increase of 25 percent in just one year (Lebo, 2008).

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Hale, Fisch, McLeod, and Bronman (2008) provide some fascinating information about the rapid growth of the Internet and information technology. They describe the increasing popularity of social networks by noting that there are more than 200 million users of MySpace (over 200 million Facebook users, too).

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They also point out that the power of Google as an informational search engine is growing almost exponentially with more than 31 billion searches being requested every month.

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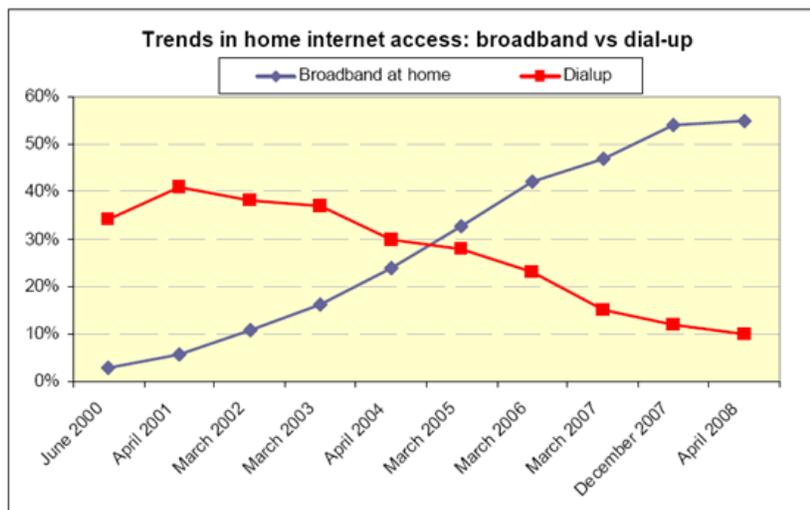
They estimate, too, that the number of text messages sent and received everyday around the world actually exceeds the planet's total population.

The Pew Research Center's Internet and American Life Project also has studied Internet activity in the United States and they use a larger survey basis than the USC effort. They reported that as of April, 2008, 55% of adult Americans had a broadband connection in their home, up from 47% in the previous year and 42% in 2006 (Horrigan, 2008; see Figure 1). They noted that broadband adoption has stalled among the poor and African Americans because of costs and availability. Although those living in rural areas are beginning to adopt broadband at increasing rates, they still lag considerably behind their urban and suburban counterparts because of costs and infrastructure limitations. Perhaps most important and in keeping with what many of us experience, Rainie and Horrigan (2005, p. 59) suggested this: "The Web has become the 'new normal' in the American way of life; those who don't go on line constitute an ever-shrinking minority."

Perhaps more than any other factor, what has fueled this growth and the normalizing of Internet usage has been this steady increase in access via broadband connections, including cable, DSL, satellite Internet feed, T1 lines, fiber optics, and wireless Internet in its various forms. Fox observed what was happening in 2005 and noted the following: "Broadband access is now a more significant prediction of online behavior than years of online experience" (p. 6).

Growth in Internet usage and broadband access most likely will continue as competition drives down connections costs, wireless access become more common in many locations, and people see increasing value in being online. It is my contention that such factors are making profound changes in the way people think about, seek, and use information for their own education and learning.

[slide 7]



Slide graphic courtesy of Pew Research Center's Internet and American Life Project - Horrigan, 2008

Figure 1. Broadband Web Use – The New “Normal”

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In that regard, I make a case in this paper through a National Science Foundation (NSF) sponsored qualitative research effort that the Internet is, indeed, changing the nature of self-directed learning (SDL). Furthermore, later in this paper I discuss some resulting implications for those of us teaching online courses through the Center for Distance Learning to ponder.

Advantages of the Internet for SDL

There has been considerable thought already given regarding the Internet's impact on SDL. The purpose of this section is to summarize some of this information.

Bulik and Hanor (2000) suggest that the Web supports self-directed learning by both increasing learner control and providing mechanisms for learners to determine what information is pertinent to them. Mathai (2002) even goes so far as to suggest that the Internet is an ideal tool for enhancing SDL because of its ready access to massive amounts of information and its ease as a communication tool. Long (2001) also describes the potential of the Internet for “searching and retrieving information” (p. 13).

Google announced in 2004 an ambitious initiative to scan and index material from the New York public library as well as libraries at four universities—Harvard, Stanford, Michigan, and Oxford in England (Tyler, 2004). Although they ran into some initial snags in terms of copyright issues and underwent some

litigation experiences, DeLaney and Trachtenberg reported in 2005 that they began full speed ahead. Hints exist in the blogosphere that a million or more books have already been scanned with no particular end in sight as they move forward with their ambitious goals to digitize a majority of the written language. Google's own portrayal of their efforts (2007), although truncated, provides considerable information and gives a glimpse into at least their version of the future for information retrieval via the Internet.

Closer to home in terms of the Center for Distance Learning and our own online resources, MIT's opencourseware effort has already placed nearly 1900 complete college courses online, with plans to include many more over the next few years (Massachusetts Institute of Technology, 2009). This course material is open for study free of charge by self-directed learners anywhere in the world. The Google and MIT efforts are visible indications of the enormity of information from which self-directed learners can choose.

Draves (2002) provides a list of reasons why he believes the Internet enhances learning, including such advantages as being able to learn at a peak time of the day, learning at your own speed, accessibility to much information, an ability to track personal progress, and the capability to test personal learning efforts. He also believes cognitive learning via the Internet is actually better than in-person learning. Long (2001) likes the virtual world's potential for learning to go "beyond problem solving to problem posing" (p. 14).

Kerka (1997) mentions the time and place flexibility of the Internet in supporting SDL. Ruelland (2003), too, likes how the e-world provides flexibility in the learning rhythm. Candy (2004) stresses the liberating value of the Internet in terms of continuous access to information and no geographic boundaries or restrictions. He also believes some forms of SDL are particularly suited to the Internet:

. . . self-directed learning is one key way in which people keep up with change and, since we are currently experiencing an unprecedented level and pace of change on a global scale, it is plausible to expect the demands of a changing world to lead to greater amounts of self-directed learning. (¶ 20)

Boyd (2004) looked at online distance education and identified some characteristics of success. Among them were abilities to be self-motivated, self-disciplined, and feeling comfortable in directing self-directed learning. Boyer and Maher (2005) describe the value in facilitating growth through a student's ability to take initiative in an online setting in what they refer to as fostering web-based transformational learning. Rager (2006) explores both the opportunities and challenges posed by the Internet's influence in learning settings. She notes that technology makes available to the self-directed learner a huge array of

informational resources, while at the same time presenting a potentially overwhelming challenge in determining the reliability of such information (a real challenge for those of us teaching online CDL courses and urging our students to find web-based resources as supports for their discussion and written materials). Kirkman, Coughlin, and Kromrey (2007) examined the correlates for both satisfaction and success in self-directed learning in terms of educational experience, course format, and Internet use. Although the study was limited by a small sample size, they did find that satisfaction and success were significantly correlated with each other as might be expected and that the availability of the Internet can reduce a learner's need for prerequisite content domain experience.

In many respects, the Internet is a great equalizer. Although initial access to the Internet can be difficult, people in isolation because of fear, undocumented status, lack of language skills, or poverty can obtain knowledge and learn what they have to learn once they can access the Internet and gain a little experience with it. In essence, if adults have the motivation, drive, and patience they can learn much by themselves. Thus, the literature seems clear, as is the intuitive sense most of us who teach online courses, that there is considerable potential for the Internet to enhance SDL. In the remainder of this paper I describe efforts to better understand this potential as I examined the Internet activities of several rural adults who had broadband Web access via a special project.

Rural Adults as Internet Users

For three years I consulted with the American Distance Education Consortium (ADEC), headquartered at the University of Nebraska in Lincoln. My primary role was examining the impact on people and their communities after the introduction of broadband access to the Internet. Such access was possible through a multiple-year grant to ADEC. This nearly 5 million dollar grant from the National Science Foundation (NSF) was matched by a similar amount from numerous cooperating higher education institutions across the U.S.

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Called the Advanced Internet Satellite Extension Project (AISEP), this demonstration effort involved partnering with the Tachyon Corporation (Tachyon, 2009) to provide broadband Internet to those people living at the edges of the “network” via hybrid networking—the Internet transmissions combined with wireless satellite and various new applications (ADEC, 2006). Although AISEP was designed to serve hard-to-reach audiences in numerous locations, my specific role was to help understand the impact of a broadband connection in rural areas.

One of several independent studies through that NSF effort mentioned earlier, three broad objectives guided my particular effort:

1. To better understand how people living in rural areas use the Internet when it is available via broadband connectivity.
2. To better understand what type of resources, databases, and collaborative opportunities rural users access when broadband Internet is available.
3. To examine the impact on individual learning for rural users who access the Internet over a broadband connection.

I was specifically interested in rural users because of my Cooperative Extension work in the 1960s and 70s where I observed the many problems people in such locations often had to overcome. Today, unfortunately, people living in rural areas still struggle comparatively with many of their urban and suburban counterparts. This is true, for example, in terms of access to the Internet:

When the Pew Internet & American Life Project first began surveying the Internet landscape in early 2000, 41% of rural residents were online, while 51% of urban residents and 55% of suburban residents were online. Rural Internet penetration . . . has remained roughly 10 percentage points behind the national average in each of the last four years. (Bell, Reddy, & Rainie, 2004, p. 2)

As noted earlier (Horrigan, 2008), there has been some increase in rural America with 38% having access to broadband at home, but there still is a considerable gap compared with urban and suburban areas.

Fewer choices in accessing the Internet, especially broadband connections, put those in rural areas at a distinct disadvantage as learners. The real power of the Internet as a resource for learning is just beginning to be understood (Web-Based Education Commission, 2000; Draves, 2002). My research effort was aimed at adding new information about broadband Internet in rural locations. Additionally, I learned many things about self-directed learning in the process.

The Research Sites

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One site I visited on two occasions was the Kettunen Center in Michigan. The Center, a complete conference facility, is in Tustin, south of Cadillac in the Lower Peninsula. It is a rural community of around 200 people. Internet connections at the Center, available during the workday and at other times by appointment, are via a roof-mounted satellite dish that feeds to 12 computer workstations. People visiting the Center can use the computers to augment any of their learning activities.

Another site, visited three times, was a recreation center in Kinross, Michigan, southwest of Sault Ste. Marie in the Upper Peninsula. Internet connections to 15 computers are via a satellite dish mounted on a raised platform adjacent to the building. Residents of this rural community of just over 1000 people can use the computers whenever the center is open, which generally includes evenings, weekends, and throughout the working day, including the summer months.

[slide 11]

A third location, visited twice, was the community resource center in Marsing, Idaho, near Boise. This is a rural community of fewer than 900 people (20% are of Latino ethnicity due to migrant worker needs in the area). Internet feeds are via 15 computers connected to a roof-mounted satellite dish. The resource center is open for limited hours during the day, on Saturdays, and during the summer.

The Research Subjects

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A decision was made to utilize both qualitative and quantitative research methodologies so a more in-depth understanding of the Internet's impact could be obtained. In that regard, volunteer subjects, both youth and adults, were sought. Utilizing the assistance of local leaders and Cooperative Extension personnel in the local areas, and via personal contacts by me, a purposeful convenience sample of 51 people participated in interviews (five from Kettunen Center participants, 13 from Kinross, and 33 from Marsing—enthusiastic support by Marsing leaders resulted in higher numbers there).

For purposes of this paper only information from the 21 adults interviewed (seven males and 14 females) are portrayed. In this study I chose age 19 and older as my definition of an adult.

Methodology

As noted above, both quantitative and qualitative data collection techniques were employed. Based on demographic information and specific questions about Internet activities, quantitative analysis was employed to derive basic comparative information. This involved charting the types of online activities and comparing the degree and types of activities participated in by more experienced and less experienced Internet users, adults and youth, and males and females. For purposes

of this paper, only the qualitative analyses described below are reported. Anyone interested in the quantitative results can find them in Hiemstra (2006).

Qualitative techniques involved participant observations, an examination of relevant documents, conversations with center and Extension personnel, and personal interviews using a semi-structured schedule. The interview schedule contained numerous open-ended items that facilitated my asking similar queries of each volunteer about their Internet usage and its subsequent impact on them (I can provide a copy of the schedule to anyone who is interested). In addition, a number of probing questions were available to help me clarify my understanding of the various responses. Occasionally, responses that I perceived as unique or that provided new directions of thought enabled me to follow up with more probing questions. All interviews were recorded and later transcribed into a digital format via word processing software. Interviews lasted an average of 40-45 minutes. Throughout the data collection process I wrote various field notes and observational memos that also became part of the database.

Merriam and Simpson (1995) describe the appropriateness of qualitative techniques for field study activities, especially when a growing understanding of impact is desired. In essence, qualitative data collection, an ever-expanding understanding, and subsequent systematic data analysis allows the researcher to uncover actual meanings of why people do, think, and even change through their own words. These research strategies fit well with my desire to understand and interpret the Internet's impact on people living at the edges of society in terms of Web access. As I show, too, some unintended consequences were new understandings about self-directed learning.

[slides 13 and 14]

After I had gathered information as noted above, I used QSR International's NVivo software (2002), a tool that supports qualitative data analysis. Funding limitations prevented my gathering additional, corroborating, or clarifying data after I began using the software, so that limitation needs to be considered in interpreting my subsequent results and conclusions. However, NVivo is an excellent tool for handling, reducing, rearranging, linking, and displaying data during the analysis process. It facilitates the constant comparative analytical approach by involving a cyclical process of coding, recoding as needed, and assessment or clarification of assumptions, hunches, and growing conclusions (Glaser & Strauss, 1967). This results in a framework for understanding and describing the data. I did not attempt any theory building in my efforts, although the NVivo software allowed me to examine hunches by searching for specific related words or phrases. My main goal was to interpret the data in broad strokes as bases for subsequent research.

The coding process I employed involved my reading the interview information, notes from participant observations, field notes, observational memos, and gathered documents two or more times based on issues of complexity and length. During the process I wrote additional memos reflecting my growing understanding. This process resulted in several coding categories (NVivo refers to these as “nodes”) that evolved as I became more familiar with the information I had gathered (in this paper I only deal with a few of these categories):

Impact on community	Experience level with the Internet
Barriers/hurdles/problems	Type of Internet activity
Success promoters	Education or learning activities
E-mail experiences	Impact on learning
Enjoyment level	Online uses in terms of learning
Skill transference to life	Self-directed learning experiences
Communicating with others	Internet uses

The decisions I made about codes, categories, and meanings of interviewees’ words in many respects were arbitrary in nature, although I had attempted to avoid using any leading questions. Even the assumption made that interviewees will always answer questions openly and honestly is subject to error because it is impossible to always know the intent or motivation behind responses. Participants’ words can’t always be taken at face value and my role was to look at connections to larger forces existing within their setting, do some interpretation, and tease out the threads of meaning and richness in the data. Even how I was perceived by respondents as an outsider is another factor that can add complexity to any answers received.

As such situations are true, of course, in most research projects, several safeguards were employed in this research effort. As an illustration, I am the only one who did the interviewing so intonation, language, and interpretation differences that could arise from multiple interviewers were eliminated. Considerable time was taken at the beginning of each interview to explain why I was collecting information, that all responses would be kept strictly confidential, and that a person could choose not to answer a question at any time or even to end the interview if they so desired (this never happened although a few interviews were shortened for various reasons).

Although a person not connected with the research effort was hired to transcribe the audio tapes into a digital format, I listened to each tape recording while reading the transcripts for purposes of enhancing accuracy. Any needed corrections were typed by me onto the digital files. The feedback from research colleagues associated with the NSF project during telephone conference calls and

face to face meetings toward the conclusion of this research effort also provided useful information in guiding the final report's development.

Obviously, this research project is only one of many efforts designed to better understand how people use, think about, and depend on the Internet. The coordinated ADEC research efforts, previous Pew and USC studies alluded to earlier, and the many studies I have not yet perused are important contributors as our understanding of the Internet's impact is increased. Ultimately, though, research on this topic, especially in what I found related to self-directed learning, must be ongoing.

The Changing Self-Directed Learner

Internet Uses

One of my areas of interest as an ADEC representative was to determine how rural subjects in this study used the Internet. As noted above, this surfaced as a separate coding category during my assessment of the interview data. During the interview I asked each person to talk about their experiences at the computer center. Most respondents talked quite freely and enthusiastically about the types of activities for which they typically used the Internet. For more hesitant people various examples, prompts, or probing questions were used to elicit more comments. This frequently resulted in more in-depth answers, ideas, and even reflections by interviewees.

[slides 15 and 16]

As might be anticipated, and in line with the work by the Pew Research Center and the Center for the Digital Future cited earlier, rural people make a wide and varied use of the Internet when a broadband connection is possible. Wang (2005-2006) also found that adults use the Internet in various ways. For comparison purposes, Figure 2 shows Internet uses in my study by both adults and youth. The adults interviewed, for example, learned what they could about various subjects, garnered information to help them obtain child support, found recipes, listened to music, obtained support needed in writing a grant proposal, and talked with friends or relatives about numerous topics.

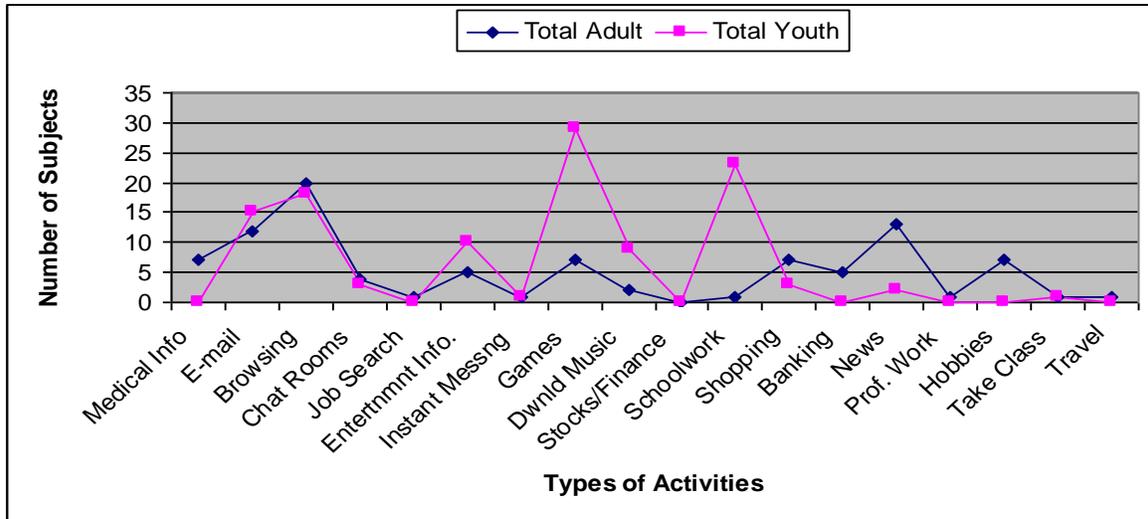


Figure 2. Online Activities by Rural Subjects (21 adults and 30 youth)

[slide 17]

Following is a small sampling of such Internet users with their own words.

A 29 year old experienced user from Michigan made some eclectic uses of the Internet, even drawing on an interest related to his childhood:

. . . I collect toys and a lot of Japanese cartoons. I used it for a lot for the animation and surfing the web.

A 47 year old male and beginning user from Michigan had only recently discovered the Center but he dove into using the Internet enthusiastically:

I've used it for references on different things, for medical problems, . . . I have used it for to look up, with my diabetes [sic.], and since my Dad got cancer they have a, I think it's called cancer.com, where you can speak with other people who were diagnosed with cancer.

A 47 year old female and experienced user from Idaho commented, *Well, I do more searching things out like, I don't know, health issues, vitamins, and then . . . e-mail. We're in a home school group that you go to a Web site to read an article or something, you know, there's quite a bit of that.*

A 19 year old male from Idaho who was an experienced user displayed some insight on how to increase personal knowledge:

I use it to find information on things that I'm interested in, like a book I'm looking for, I'll go to the Internet and find the author, title, and a rating.

A 42 year old female and beginning user in Idaho made a very interesting use of the Internet:

I like to train, I like to run, so I look for Olympic records and things like that, how close I want to get to it.

A 70 year old female and a self-described novice user in Idaho knew what she could do and couldn't do:

I learned on my own to get and send e-mail and that's all I basically do.

From an experienced 30-39 year old female in Idaho:

Employment, to research medical history . . . All kinds of things. I use it for everything. You've got to learn how to do it.

The sample quotes above reveal how many people keep up with the constantly changing world and intuitively understand that their user-derived needs often can be met through the Internet. They are answering interesting questions about life, personal interests, and essential needs through their Web searching. Having a means for fairly quickly and efficiently meeting such needs becomes an important tool in developing both lifelong and self-directed learning skills (Brockett & Hiemstra, 1991; Hiemstra, 2002). I mention more about this notion of developing SDL skills later.

[slide 18]

Impact on Learning

One important research objective was to determine the impact on learning for adults who have broadband access to the Internet. In that regard, several related questions were asked during the interviews. As might be anticipated, respondents offered a wide variety of opinions and relayed numerous personal experiences. However, there were some commonalities or similarities across the responses.

For example, the notion of efficiency and easy access to information was expressed frequently. Following is a sampling of these comments.

A 55 year old female from Idaho with experience talked about her efficiency and growing skill:

Well, I've learned to be a little more overall efficient on the computer. . . As I use it more I've found my way around a little better.

A 30-39 year old female in Idaho with experience was quite clear on how she felt she had changed as an Internet user:

. . . First of all, the knowledge of the Internet. I didn't even know I could do that much. Probably a lot, [sic] I can use it now. . . Well, I've learned a lot more altogether because not only have I learned how to use the Internet, but now I know how to look things up without having to spend all day looking at a book and about everything you want to find out.

A 29 year old male from Michigan with considerable experience added this statement:

. . . it is now easier to access stuff and it wasn't that easy before.

A beginning user who is a 61 year old female in Idaho was quite definitive:

Oh definitely, it's made it a lot easier to get the information and it gives me a lot more information than what I would be able to get any other way.

A general increase in overall knowledge and skill from the experiences of using the Internet was expressed in various ways:

A 47 year old female living in Idaho who as an experienced user appreciates how it fits in with her busy lifestyle:

Well, I have learned quite a few things on the Internet and these are things I wouldn't have probably learned otherwise because our lifestyles are pretty busy and we live in a very small town. The library is pretty limited with what their information is. I just wouldn't have had access.

A 19 year male in Idaho, who also is an experienced user, liked what it provided for himself:

I've really picked up on really good sites to go to for education and stuff like that.

A 40 to 59 year old woman in Idaho with considerable Internet experience said it very simply:

Oh my gosh, I learned a lot off the Internet.

This notion of enhanced knowledge and skill also was expressed in terms of how a person's learning abilities were affected.

A 47 year old male in Michigan and an enthusiastic beginner described how he was learning from others:

I'm learning by other people's experiences, how they changed their lives, and how the changes they made helped them live their lives . . . better.

A 19 year old male from Michigan and an experienced user talked about how important his involvement with computers had been for his learning efforts:

A lot of my learning is really based on the computers because that is where I learned most of what I know.

A 40-59 year old female in Idaho, an experienced user, talked about the importance of the Internet to her as a learner:

Yeah, well I think you do have a different way of learning. I think it's faster for one thing. The ease of it is wonderful. It's right there at your fingertips, you're not having to go somewhere to search it out or whatever.

Notions about curiosity, enjoyment, and general interest or excitement in working with the Internet came up several times.

A 47 year old female from Idaho who was an experienced user said,
. . . it makes it a lot more interesting and exciting than just trying to search through 100 books at the library.

Another Idaho female, a 70 year old beginner, said something similar even more emphatically while not understanding why her contemporaries weren't as interested:

I'm really excited about what I can do and I'm really excited about what I'm going to learn to do, the future of it, and I try to

get my other friends approximately my age and they won't and I can't understand because I tell them, if I can do it, so can you.

Another older female in Idaho, a 60 plus experienced user, talked about how she now approaches the use of the Internet:

So I guess I've become more exploratory; my learning before that was more specifically directed to job or personal leisure or something like that. Just kind of discovering something for the heck of it is kind of fun.

It was anticipated that interest or involvement in online courses would exist among the respondents because of the growth of distance education throughout the world. However, very little involvement was found. A couple of adults had used the Internet to access some course material at a university, e-mail a teacher about an assignment, or send in material electronically for an assignment. Only two people had taken a course of some sort via the Internet. Perhaps distance education providers were not advertising the possibilities well enough in these rural areas or the infrastructure available for taking online courses simply was insufficient for pursuing such learning opportunities.

The 29 year old American Indian male in Michigan with considerable Internet experience was able to access a course as noted here:

. . . the A+ certification was done online through [the University of] Michigan.

A 40-59 year old female, an experienced user took a couple of courses to aid her teaching abilities:

The Word course online I did take. It was free and that's how I learned a lot before I started teaching it because I really didn't use Word. . . . I took another Excel course so that maybe I could teach . . . [it].

There is no doubt the Internet has impacted the way rural people learn, use the Internet to access learning resources they need, and undertake various learning activities. Some of the people I interviewed had become very excited about the Internet as a resource for new learning activities. Even though interviewees weren't using terms like self-directed learning, personal control, and self-motivation, I obtained the sense that learning by themselves had become rewarding and even habit forming. This research has only begun the process of understanding such learning enhancements. Future research can delve more intensely into this so

the ways people learn, and the corresponding ways people like us can help them, will be enhanced.

What Does This All Mean?

My research effort generally supported previous research about Internet users. In essence, rural people in the United States make good use of computers that can access broadband Internet. With experience, such use often becomes more sophisticated, essential, and conducive to making a real difference in the lives of people and, subsequently, in their communities.

We know that people living in rural and remote areas will become avid users of the Internet for information acquisition, skill building, and learning purposes if opportunities to do so exist. This research report, other ADEC research reports, and national efforts by the Pew Research Center and USC's Center for the Digital Future cited earlier confirm this. Having access to broadband Internet, such as the satellite transmissions that were foundational to the people studied in this project, facilitates use in rural areas.

Outcomes from Using the Internet

[slides 19, 20, and 21]

After interviewing 51 youth and adults, observing what was going on in parts of Idaho and Michigan, reading and rereading interview transcripts, and finding ways to make a whole from the various parts, a conclusion can be reached. I believe, at least in the sites visited, that the Internet has become an essential learning tool for enhancing the lives of many of these people.

In many respects, the power of broadband Internet has helped rural people think of it as their encyclopedia, World book, and self-directed "go to" source of information needed for life. Summarizing from some of my interviewees' words, yes, that includes e-mailing friends, listening to a song, and booking an airplane ticket for that get away vacation. However, who can say that such snatches at joyful living aren't just as essential as finding information about Olympic records, chatting with someone about your Dad's cancer, or locating the information necessary for submitting a funding proposal. As a person in Michigan said, *"Anything that you want is there. The whole world in a computer."*

This embracing of the whole world in a computer through Internet access seems to even be extended as these rural users gain experience and discover new applications. Think of those earlier quotes from several people who exclaimed almost with glee how they had discovered all the additional things they could do on the Internet and how that was helping them in various ways. This, in turn, can

lead to self-discovery and self-improvement, which ultimately benefits community and even society.

I was amazed at how quickly many of the interviewees seemed to become quite knowledgeable about the Internet, computers, and various associated applications. For example, my purposeful sample resulted in both experienced and inexperienced interviewees. Often a fairly new user was employing the language, concepts, and approaches associated with Internet familiarity one might expect more from a very sophisticated and experienced user. Web site names and URLs, common Internet jargon, complaints about slow computers, discerning comments about which search engines did what, and even Web page design talk emanated from many of these Internet users.

There also appear to be new learning approaches and skills developing as these rural people use the Internet. Several have readily accessed various resources or information sites to help them with their learning needs, including such actions as finding animation resources, increasing typing skills, e-mailing a professor about a college course requirement, and finding material for a special interest. As Raupers and Roberts (1998) suggest, technology seems to motivate some students to learn.

So, are there some indicators of success we can look for when assessing the Internet's impact on rural and other users? Here are several that appear to come from the interview data:

- A growth in computer and Internet knowledge, jargon, and use abilities
- An ability to evaluate Web pages and discern among them for their perceived value and usefulness
- Increases in both time and sophistication in using search engines and searching techniques
- Increased typing, communication, and information retrieval skills
- An enhanced or growing confidence, curiosity, enjoyment, and even excitement about using the Internet
- Turning more to the Internet for the information, knowledge, and resources required for meeting life's needs and keeping up with change.

Future research efforts are needed to verify, add to, and even quantify such indicators. However, an important lesson learned from this research effort is that having access to broadband Internet can make an important difference in the lives of many rural learners.

Impact on Community

I was also interested in determining what kind of an impact broadband access to the Internet has on a rural community. Looking at just three sites, only two of which were in a true community setting, is a real limitation in answering this question. However, out of the interview data and observations I made of many people using the computer labs, some beginning insight is possible.

In Marsing, Idaho, and Kinross, Michigan, the computer labs appear to have made a real impact, not only in the lives of many people, but also on the communities in which they live. For example, in a small community it is a place to do something meaningful when there may be few alternatives. In some respects, having access to the Internet through a computer lab that pulls people of all ages together for a common purpose, is building on the educative community notions popularized by the community school movement a few decades ago (Hiemstra, 2000).

A 55 year old female in Idaho who is experienced at using the Internet talked about how she uses the Internet to help her connect with the community:

I like to look up information about educational things for my kids at school, different schools, programs, book clubs, places that sell books. I just like going on and getting information whatever . . . happens to be going on in my life at that time.

A 55 year old female in Idaho adds to the notion of a direct impact on community:

. . . the Marsing Resource Center has been a great addition to the town. I think there's a lot of potential to be helpful to this community. They have done a lot and they can do more.

There is some evidence that the computer labs can serve as a stimulus in community capacity building, where administrators, teachers, volunteers, and even users of the Internet begin developing a desire for more personal learning, exposure to ideas, and computer-related courses. Various learners, for example, talked about wanting to take some courses. Here is a sampling.

A 54 year old female in Idaho, who was experienced with using the Internet, had desires for learning new skills:

As far as educational courses . . . that is another area that would be very interesting to me. One thing that I would really

like would be a course, maybe an Internet course, that you could go in and find out . . . well, . . . I don't know how to access the Library of Congress.

A 48 year old female in Idaho with experience expressed a desire for more courses offered through computers:

I am very hopeful that they will increase the amount of classes that they offer and I hope that the community will take them.

Various training implications arise from such needs and desires. Administrators and coordinators will need help in learning how to take a broader view of their roles as contributing to a community's development. Teachers and facilitators of learning will need to be found for any new courses and trained on how to use the Internet effectively and efficiently as an educational aid. Even users, themselves, can be helped to become savvier about employing the Internet as a learning tool.

This notion of capacity building harkens back to the ideas many years ago when Biddle and Biddle (1965) were noting that developing a community really means human development. In many ways, sitting at a computer screen and accessing the Internet can be seen as a solitary activity that keeps people apart, rather than contributing to a community by developing human capacity. However, the necessary act of journeying to a centrally located community center, even for self-directed learning, brings people of all ages and walks of life together over a common need. As suggested by Schrage's (1999) work, the AISEP efforts may have demonstrated an innovative new model for reinvigorating the rural community.

Reflections on the Future

I was able to take only a brief snapshot in time of how rural people in three locations use, think about, and incorporate into their lives access to broadband Internet via satellite transmissions. Thus, any reflections that I offer must be considered with a certain amount of caution. However, an important outcome of a research effort that employs some intensive qualitative techniques is that it enables the researcher to live even for a short time through the eyes, minds, and experiences of the people being studied.

Such an insertion into the lives and communities of people is, at best, imperfect in helping a researcher form a real picture of the reality such people experience. I struggled with that imperfect reality. Were enough questions asked? Were too many asked? Were the right kind of probing or follow-up questions

used? Were the interpretations of typed transcripts, field notes, and memos about perceptions accurate? Did my personal biases and my generally positive nature creep into those evolving perceptions? Did I select quotes that tended to match what words were expected to have been found in these communities while overlooking conflicting or contrary thoughts? Did my perceptions of self as a researcher, as a person experienced with technology, and even as an avid Internet user color any data analyses?

There also are some obvious things that were not learned in this study effort. For example, there is always a certain amount of built-in selectivity in terms of who makes their way to a computer lab in the first place. Finding volunteers from that self-selected group means many others were not studied. We need to know why some people don't use the computer labs. We need to know about those who began using a specific lab, but for various reasons do not continue. I also wish I had asked more specific questions pertaining to SDL.

Recognition of such struggles and unanswered questions is important, for it serves as a constant reminder, both for me and for you, that the imperfect world of research still results in new knowledge and understanding. Thus, from my overall effort to understand more about how rural people use the Internet when there is a broadband connection, it is possible to make a few personal observations. It is anticipated that reflecting on these observations may help you think about the future benefit for learners as we find ways to increase Internet access for hard to reach people.

Information Overload

Almost everyone who accesses the Internet soon experiences the enormity of what is there. The good news is that almost anything about which you are interested will be addressed in some way via multiple Web sites. The bad news is that almost anything about which you are interested will be addressed *ad nauseam* via multiple Web sites. The resulting information overload can be daunting, to say the least, especially for a new Internet user.

Several interviewees in the current study expressed concerns about the bombardment of information when working with the Internet. This comment from a woman in Michigan was typical: "*There is just so much to look into that it is almost like you don't know what to choose.*" Thus, future attention must be given to providing initial and adequate orientation on using the Internet for new users, helping people understand how to use the best search engine techniques, and giving guidelines for evaluating Web sites. In essence, as online teachers we must spend new energy in discussing ways of dealing with lots of information as the problem will only grow bigger over time.

Meeting Medical and Legal Needs

People living in rural and remote areas often are at a disadvantage in terms of finding those who will advocate for them when they have medical or legal needs. Financial limitations, social service or specialized medical organizations located in a town many miles away, and even a reluctance to depend on others can act as barriers in securing vital information. The Internet has the potential to help people secure some related knowledge through their self-discovery efforts.

Some of the people interviewed for this study, for example, described how they turn to the Internet for medical information.

A 47 year old male in Michigan with beginning experience with the Internet, has diabetes. He describes how the Internet has helped him cope:

Well, the sites I pull, on the diabetes, they've got sites where medical doctors share their information, [sic] have sites on there, actually people who have diabetes Type I, and you can pull that site up and say their information might be a short story book or like a term paper. The information that they've gathered and what they've learning.

A 48 year old woman in Idaho who is experienced talked about finding medical information:

Yes, we look for medical . . . if we have a question, instead of going to the encyclopedia, we go to the Internet.

A 30-39 year old woman in Idaho, also with experience, was interested in finding some medical information:

I put in the word emphysema and Google came to a whole list of different things you could find out about emphysema and the one I went to, it said, diagrams of the lungs, and you click onto that and that takes you to a Web site that has everything you'd want to know about the disease including what your lungs look like.

Other interviewees talked about special situations they were facing that had legal implications.

The woman described just above used the Internet to find information to help her children:

I've used it to research child support laws for my kids.

A 42 year old female in Idaho with only beginning experience, had a similar need met by the Internet:

Oh, I look up information in order to get my child support. How to hire a lawyer, just tons of information if can get it.

Other specialized needs related to such areas as finances, searching for jobs, and even finding information about where a certain relative was buried, were some other uses described by these interviewees. Future research to uncover the variety of specialized uses by rural people can become the basis for developing various kinds of educational programs and resources.

Concluding Thoughts

Development of the Advanced Internet Satellite Extension Project came about because ADEC leaders believed there were better ways of serving those living in rural and remote areas through technology. The National Science Foundation provided important financial support so that new models and approaches in support of the Internet could be determined. The results have demonstrated that satellite transmission of broadband Internet is one important means for providing such access.

What the future holds for rural and remote areas is still unclear. Foundation and other outside support will not be sufficient to meet all such needs across the United States. I am pessimistic, too, that governmental sources will be able to bring broadband Internet to all the places initially promised by the former governmental administration (Bush, 2004). President Obama included as one of his campaign promises that every community in America will have broadband Internet access during his administration (Obama, 2008), but Kang (2009) reported that the plans thus far do not contain much detail. Demonstrating the viability of Internet access in rural areas and that people living in those areas will use it, can serve as the basis for finding more ways of meeting such needs.

Stone, Itoi, and Flynn (2004) provide some insight on what may be new ways of thinking about the situation. They describe how EZ Wireless in Hermiston, Oregon, decided to tackle the problem of providing high-speed Internet access in rural areas. Through 35 towers and 75 antennas, they broadcast a signal that covers all of a rural community through their Wi-Fi blanket. Such efforts, added to what has been demonstrated through the AISEP, suggest that means for

ensuring people living in rural and remote areas have access to broadband Internet can be found.

Having broadband access is very important to many people living in rural areas and will likely become more important in the future as our information age continues to expand. However, as a qualitative researcher I must ask myself, and you, if I have made the case implied in my title for this paper and in my opening section. I think I have, in that the people I interviewed, almost to a person, were excited about what they were able to do, were enthusiastically using the Internet to meet various personal learning needs, and were truly discovering new things they most likely could not have done without the Internet. I sensed, and perhaps I am reading more into it than I should, that they had changed as learners and were undergoing such change mainly by themselves.

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I am not a biologist, but I am going to borrow an analogy now from the world of biology. In evolution there is a concept called self-optimization (Rikvold, 2005). Self-optimization is where a new species is introduced through a small probability of mutation and selection. The new system can become maximized and eventually self-sustaining if there are not detrimental constraints. By introducing people to the wonders and ever increasing potential of the Internet, I believe we are helping to evolve a new species where the power of the Web changes the way we think about learning and acquiring information.

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Most of us can see this perhaps most clearly in our youth, as the Internet has become a natural extension of almost everything they do. Think about how your children, grandchildren, nephews, nieces, etc. use blackberries, cell phones, computers, other mobile technologies, and corresponding social networking innovations daily (if not hourly) in various ways. Generation X people (roughly defined as those born between 1965 and 1980) and especially the Generation Y people (roughly defined as those born between 1980 and 1995) [this latter group often referred to as the millennials (Straus & Howe, 1992)], have been leading this infusion of the Internet into our daily lives. Our ESC average age may be in the mid-30s, but the Generation Y people are fast pushing into that age range.

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I perceive that many young people prefer electronic communication to oral communication and what many of us at this conference would refer to as written communication. I believe that many of us here today over the age of 40 need to do as much as we can to understand how younger people are consciously and even

automatically using the Internet. In essence, what do we need to do to both understand and meet the needs or expectations of our younger current and potential students? Porter (2006) talks about this as what lets people connect online in meaningful ways. For me, it has involved joining Facebook, LinkedIn, Twitter, starting a blog, and even venturing into the thumb wrenching world of texting. I also read on a regular basis Rebecca Thorman's (a young millennial) wonderful blog, *modite* (2009), where she speaks directly to age-group peers about various life and career issues. Frankly, I don't understand in a visceral way everything she talks about, but I certainly have learned a lot about the way she thinks.

I will never understand nor use these communication tools like my children do. However, I can at least begin to grasp the profound nature of the change taking place and am becoming a bit more used to the somewhat "abrupt" or what my old eyes see as coded communication with others engaged in by those younger than me [rofl, nm, brb, <3, g2g, ^^, lol, etc.].¹

I saw this increasing attachment to and use of technology and the Internet happening, too, in the rural adults as well as the youth I studied. In my view, the Internet is helping to create a new type of independent or self-directed learner. The beauty of a conference like this one and having the experience you do with online teaching is that you can look at my research and assail, challenge, support, and, above all, do some related research if you are interested in what I am proposing.

Given that premise and my hope that you will challenge my research results and current thinking in various ways, I am proposing several ways I believe my research has implications for Empire State College's Center for Distance Learning. I do so with a bit of trepidation as I won't even begin teaching my first course for CDL until this coming May, so I confess to considerable naiveté regarding what Empire State College has done in the past or is planning to do in the future. I also realize that I probably will be stepping on several toes. However, I have never been accused of not speaking my mind and I will appreciate hearing about your ideas on other possible implications:

[slides 25 and 26]

1. For Empire State College to maintain its competitive edge amidst the ever increasing number of online course providers, we must continue to promote our courses to those prospective learners living at the edges of the "network."

¹ If you need a decoding, here is what they mean: rofl = roll on the floor laughing; nm = not much; brb = be right back; <3 = heart; g2g = got to go; ^^ = look up; and lol does not mean lots of love, it means laugh out loud.

2. We need an increasing effort to recruit students via online means such as Facebook, MySpace, instant messaging, etc. Think of how powerful such communication was for the Obama campaign.
3. To make real connections between distance education and self-directed learning, we need to continually ask and answer the question of whether distance education is owned by the technology we use or by our beliefs about adult education.
4. Universities today are doing away with out of state tuition requirements (Sanchez, 2009). How does this affect our competitiveness even as we consider aggressive recruitment via online means? We may need to be more deliberate in the way we approach understanding the maintenance of a competitive advantage (Porter, 2008).
5. Because those younger learners coming into our courses have grown up with more isolated or individualized communication approaches, we need to increase the efforts we make as instructors to build individualized and self-directed learning opportunities into our instructional efforts (Brockett & Hiemstra, 1991; Hiemstra & Sisco, 1990).
6. Because each course we teach has limitations in the ways self-directed and individualized instructional techniques can be utilized, there are various ways components within the total teaching and learning process can be utilized to help learners assume increasing responsibility for their own learning. We need to find ways of incorporating such micro-components into our teaching (Hiemstra, 1997).

For the people I studied, the Web has a potential for resource access any time, any place, any path, any pace. But it is still up to us as professional educators, online course designers, or human resource developers to make sure that the learning efforts we facilitate are inclusive enough so that people no matter where they live or no matter what their circumstances can be a part of it all (Hiemstra & Poley, 2006).

I realize I am preaching a bit here, and most certainly I am preaching to the choir, but we must remember to serve those in the remote areas of the country, those who may be hard to reach for whatever circumstance, and those younger adults, such as the millenials, who may require new ways for teaching and even reaching them. Thus, I draw from the wisdom of one of my youngest interviewees to end this paper. An 11 year old female in Michigan may have spoken for both the youth and the adults I studied when she described how important this technology is to her: *“In my sleep I dream about computers.”* Let’s turn that dream into reality for everyone.

[slide 27]

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