Adults as Learners | 3

L earning and going to school have most often been associated with childhood and youth; most of our ideas about learning and teaching are based on educating children. Adults, however, do not stop learning when they end their formal schooling. Whether they finish high school, college, or neither of these, adults find themselves faced with changing roles and life choices and, as a result, need new skills and knowledge throughout their lives. More and more, adults are seeking out educational opportunities-to relearn skills they have forgotten, to acquire skills they never got, or to learn new skills that were not even taught when they attended school. But adults are not children; their diverse needs, goals, and life situations would challenge even the best system of adult education. Thus, a discussion of how best to address the literacy needs of the Nation must include a careful look at the adults themselves-how they use literacy in their lives, how they learn, and what motivates them to improve their skills or gain new knowledge.

FINDINGS

■ Adults with low literacy skills do not fit common patterns and stereotypes. They are at all ages and stages of the life cycle and have many different backgrounds, many different lifestyles, many different experiences and skills.

■ A person's literacy skills vary in the different contexts of their lives, such as home, work, or school. For example, people are often more skilled at reading job-related materials than they are at reading unfamiliar materials. Each person can be thought of as having a profile of literacy skills adapted to that person's life situation and circumstances.

■ Traditional school-based approaches used to provide education for children do not work well for adults because:

—adults have many roles and responsibilities and thus many competing demands for their time;

—adults bring with them a wealth of concepts, knowledge, and experience on which to build new learning;

—adults have little time for learning, so they must often seek to learn things that are meaningful and can be applied immediately in their daily lives;

—for the most part, adults seek education because they choose to do so-participation is voluntary, dropping out and recentering are common.

■ The people most likely to benefit from adult education are least likely to participate in it. Situational barriers such as work schedules, childcare responsibilities, transportation, and cost often prevent participation in formal education. In addition to these situational barriers, adults also have attitudes and feelings about school and learning that affect their decisions about further education.

■ Taken together, these findings suggest that adults are more likely to invest the time and energy in opportunities to learn if those opportunities:

—are provided in supportive environments that reduce the stigma attached to low literacy;

—utilize materials and methods that respect the strengths, experiences and goals of learners;

-offer content and materials that build on daily life experiences; and

-can be delivered in ways that allow flexibility and choice-so that individuals can learn at their own pace, on their own time schedules, and under conditions that work best for different individuals.

Technologies offer considerable promise for meeting the needs of adult learners, because they can deliver learning in places other than classrooms, facilitate the efficient use of precious learning time, sustain the motivation of adult learners, and reach many different types of learners in the ways they learn best.

LITERACY IN EVERYDAY LIFE: ADULTS WITH LOW LITERACY SKILLS[1]

The world of adults with low literacy skills in the United States is unknown territory for most of us. The research base is slim indeed. Little is known about what most adults read, how they use literacy in the various domains of their everyday lives, and how literacy interacts with technology. Still less is known about how adults with low literacy skills lead their lives in a print-based society, especially the great majority of those adults who are not enrolled in literacy programs.

A large number of adults with limited literacy skills have found a variety of ways to survive in a print-based culture, as shown by a few ethnographic studies. They have talents and skills in social relationships and in practical life skills. Many adults with low literacy skills are successful in the workplace; lack of such skills is often masked by other competencies so that colleagues and peers are unaware of these workers' ''hidden problem.'' In contrast, some new immigrants may suddenly find themselves perceived as nonliterate because they lack written and communication skills necessary to function effectively in English, despite being highly literate in their native language. Whatever their current life circumstances, however, most adults with low literacy skills are aware that society places a great deal of value and status on literacy.

Although research on the literacy demands of everyday life is limited, several studies provide insights into literacy uses in diverse communities.

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[1] Except where noted, this section draws on Center for Literacy Studies, University of Tennessee, Knoxville, "Life at the Margins: Profiles of Adults With Low Literacy Skills," OTA contractor report, March 1992. The names of individuals have been changed in order to guarantee anonymity.

Some studies have used ethnographic methods that provide rich, descriptive data about the contexts and activities of participants. Some of these studies address the literacy practices of adults with low literacy skills, and others address everyday literacy of non-native English speaking families. Other researchers have investigated how workers deal with the literacy demands of their jobs. These studies offer some important insights and conclusions; most are based on small samples of people who have been studied intensively and thus their generalizability is limited.

Profiles of Diversity

Adults with low literacy skills do not fit common patterns and stereotypes. They have many different backgrounds, lifestyles, experiences, and skills. Consider the following adults:

Fred Kruck is a 50-year-old steelworker who has recently been laid off because the plant where he had worked for 19 years closed. Last year he enrolled in truck-driving school as part of a Federal program to train laid-off workers in new skills; he dropped out of the program, however, because of a well-kept secret-he can barely read and write. He was ''. . . the top laborer in the blast furnace, the meanest, most dangerous furnace in the mill, where he hollered orders to a dozen subordinates, deploying equipment the size of buildings. It never mattered, never even was mentioned, that he had graduated from high school without really learning to read and write. Now, with his furnace gone, it does. ''[2]

Lisa Bogan, aged 37, was born in rural Mississippi and lived there until she came to Knoxville, Tennessee, with her frost husband in 1973. Separated now from her second husband, Lisa is struggling to overcome the effects of an abusive second marriage and provide for her two children with a job as a sales clerk in a department store. Although she has a high school diploma she says she stopped learning in 6th grade and her

Although literacy is an important part of everyday life, individuals vary greatly in their purposes for reading and writing.

reading level is at 5th- or 6th-grade level. Both literacy and technology present some difficulties for her, and she has tried adult basic education classes to upgrade her skills. She is very active outside the home and family; she votes, attends PTA meetings, talks with teachers, and is active in her church.

Alicia Lopez, age 47, migrated alone and undocumented from her native Mexico to the San Francisco Bay Area in 1981. In 1986, she became a legal resident of the United States through the Immigration Reform and Control Act. Six years ago she brought her daughter and infant granddaughter to the United States. Alicia now lives in a home with her sister's family and raises her 6-year-old grandchild as if she were her own daughter. Although she dropped out of school in Mexico at age 13, she can read and write Spanish quite well; her written and oral language skills in English are, however, quite limited. Until 5 months ago, Alicia worked as a cook in several food preparation factories. Since nearly all of the employees were Spanish-speaking, she was able to function with very limited English. Alicia recently enrolled in an employment training

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[2]Dale Russakoff, "Lives Once Solid as Steel Shatter in Changed World,' *The Washington Post,* Apr. 13, 1992, p. A1.

program where she is learning facility maintenance skills and studying English. Her goal is to find stable employment that will enable her to adopt her two youngest grandchildren, currently in the foster care system because of their mother's drug addiction. While she is determined and capable of mastering new skills and systems, her limited English presents significant barriers to her ability to advance, particularly in the employment arena.

As these and other profiles in the literature suggest, there is no one type of person nor one universal characteristic that defines people with literacy needs. Adults with low literacy skills

> . . . appear to embody a range of attributes, rather than presenting a homogeneous picture. Some are ambitious, others content; some approach life positively, while others are fatalistic and depressed. The same range of characteristics maybe found in the population at large or among literate, educated adults.[3]

similarly,

> . . . individuals can be expected to vary greatly in their purposes for reading and writing, in the texts they choose to read and write, as well as in the contexts for performance of reading and writing abilities. A person's literacy profile might be conceptualized as a contemporary quilt in progress whose configuration is closely linked to specific settings characterized by specific opportunities and constraints.[4]

Those in need of literacy education, or 'second chance" basic skills education,[5] can be almost anyone:

- Women who need to re-enter the workforce in the wake of divorce or teenage mothers who dropped out of school when they became pregnant.
- Refugees with college degrees who speak no English or children of Hispanic migrant workers whose itinerant way of life limited the time they spent in school.
- A recent high school graduate who is having difficulty entering the workforce or a 50-year-old auto worker whose plant recently closed.
- A mother at home who wants to be able to help her children with their homework or a working mother who needs to improve her mathematics skills in order to get a promotion.
- A truck driver who needs to pass a newly mandated written examination in order to keep his job or an inmate at a prison who is required to meet a minimum standard of literacy.

"The target population encompasses Americans who are employed, underemployed, and unemployed."[6]

Adult learners vary on a multitude of dimensions. If the children in our public schools present a picture of remarkable diversity, adults do so even more. Adults learners vary in age from 18 to over 80-with a corresponding wide variety of life experience. When children are in school, those of the same age will have approximately the same skill levels. Not so with adults, however; all levels of skill-horn little or none to the highest levels-can be found at any age. Adults also vary in the amount of experience they have had in the workforce and the literacy demands of the jobs they have held. harriers come from all cultural and ethnic groups, urban and rural. Some live in poverty, some are middle-class. Adults who need to learn English can have extremely diverse experiences with

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[3] Hanna Arlene Fingeret, ''Social Network: A New Perspective on Independence and Illiterate Adults,'' *Adult Education Quarterly*, vol. *33*, No. *3*, spring *1983*, p. *142*.

[4] Susan L. Lytle, "Living Literacy: Rethinking Development in Adulthood," unpublished manuscript, n.d., p. 8.

[5] Larry Mikulecky, "second Chance Basic Skills Education," *Investing in People: A Strategy to Address America's Workforce Crisis, background* papers, vol. 1, U.S. Department of Labor, Commission on Workforce Quality and Labor Market Efficiency (cd.) (Washington, DC: Us. Government Printing Office, February 1986).

[6] Ibid., p. 218.

New immigrants may often find themselves perceived as nonliterate because they do not speak English.

reading and writing in their native language—from no experience with the written word to highly proficient (see box 3-A). In addition, adults vary in their cognitive abilities; some significant portion of adults with low literacy skills probably have undiagnosed learning disabilities (see box 3-B).

Competence and Strength

Research reveals that adults with low literacy skills are strong and resourceful, skilled and knowledgeable. It is often assumed that such adults live impoverished lives, socially and culturally as well as in terms of literacy. In contrast, the research suggests that to lack reading skills is not necessarily to lack other skills: indeed the adults who have been studied had many other skills, full social lives, and much cultural knowledge. They were respected and "functional" members of their communities.[7]

A common theme among the profiles of adults with low literacy skills is that of self-reliance and independence. Many are determined to be independent, dislike having to rely on others, even family members, and do not want to live on welfare. They want and expect to have control of their own lives (see box 3-C).

Many also are faced with pressing issues of survival. Their lives have a fragile stability that can be easily overturned by life events such as poor health, accidents, or job changes. The following case Provides a telling example.

Les Willard is a 36-year-old man who lives with his wife and two children in one of the poorest neighborhoods in Knoxville, Tennessee. Les puts in long hours of work, including extra jobs on weekends and fixing things around his own house. He needs to work these hours to support his extended family, which includes a disabled brother and an elderly father. If he could get his electrician's license, he would earn higher wages and perhaps need fewer working hours, but he cannot get the license because his reading skills are too low to pass the required test. He cannot improve his literacy because he needs to work such long hours. He has been physically ill off and on over the past several years with an undetermined stomach ailment. He does not seek medical help because he has no medical coverage. When he fell off a roof and broke some ribs, he bound them up himself, and went on with his life. He sees himself as someone who "holds up," who takes pride in managing his family responsibilities and taking care of his "kin." He and his wife have managed to build a solid marriage as well as a supportive environment for their children and extended family. They want their children to be better educated and have more opportunities than they had and have taken

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[7] Hanna Arlene Fingeret, Syracuse University, "The Illiterate Underclass: Demythologizing an American Stigma," unpublished Ph.D. dissertation, 1982; ' 'Social Network: A New Perspective on Independence and Illiterate Adults," *Adult Education Quarterly, vol. 33, No. 3,* spring, 1983, pp. 133-146; Linda Zeigahn, "The Formation of Literacy Perspective, " *Adult Learning in the Community,* Robert A. Fellenz and Gary J. Conti (eds.) (Bozeman, MT: Center for Adult Learning Research, Montana State University, 1990); and Linda Zeighan, "Conceptual Framework for a Study of Community and Competence, " paper presented at the 29th Annual Adult Education Research Conference, Calgary, Alberta, Canada, May 6-8, 1988.

Box 3-A—Literacy Needs Among Those Who Speak English as a Second Language

Imagine being the teacher in a class that includes:[1]

Paulo, age 49, who came to the United States from Mexico 12 years ago. He went to school through the 6th grade and can read and write in Spanish at an elementary level. In the United States, he lives and works in a community that speaks Spanish almost exclusively, and consequently he still speaks English at a beginning level.

Chuob, age 30, who grew up in a small village in Cambodia and has had no formal education. She speaks only her native tribal language, which until recently had no alphabet or written form. She cannot read or write in any language.

Tien, age 24, who recently immigrated from Vietnam. He can read and write well in Vietnamese, having completed several years of post-high school technical training there. Although he speaks English at a beginning level, he does not yet know the English alphabet and thus cannot read or write any English.

Marta, age 35, who was an elementary school teacher in a city in El Salvador. There she read and wrote fluently in Spanish and had an intermediate proficiency with spoken English. Since her arrival in the United States 1 year ago, she has lived and worked in a largely English-speaking community and her spoken English proficiency has improved to an advanced level. Her ability to read and write English is still quite limited.

Carmelita, age 19, who was born in the United States to parents who had immigrated from Mexico. She grew up in an urban neighborhood that was exclusively Spanish speaking. Although she learned to speak English in school, she had difficulty keeping up in her academic work. She dropped out of school in the 8th grade because she could not understand her classwork well enough. Although her spoken English proficiency is quite high, she does not read or write well in either English or Spanish.

The needs of these five learners exemplify the widely divergent population often known as limited-English-proficient (LEP). LEP learners can vary by age, by socioeconomic status, and by legal resident status. Some other important characteristics that vary across LEP populations include:[2]

Language and educational background. Levels of education can vary from those who are completely unschooled and lack rudimentary learning tools to those who are highly educated. While some LEP persons read and write extremely well in their native languages, others may not read or write at all, or may speak a nonwritten language. Some speak and write a language with a Latin alphabet or other linguistic features similar to those of English, and therefore face an easier transition to English proficiency. Others speak and write languages with non-Latin characters, or with a phonology that differs from the English phonic sounds, and thus may take longer to make the transition to English proficiency.

Occupational skills. Some LEP persons have professional or technical skills, but need proficiency in spoken and written English before they can use their skills in the U.S. job market. Many have skills that will not transfer into the U.S. job market, or have no job skills. Those with education or occupational skills are often underemployed if their proficiency in English is low.

Cultural backgrounds. LEP populations have a diverse array of cultural backgrounds. Some were born in the United States or have lived here for a long time, although many LEP people live in urban barrios or migrant camps and consequently are still immersed in a nonmainstream subculture. Others arrived in the United States recently, either by choice as migrants or immigrants, or by necessity, as refugees. Of the recent immigrants, some are from urban industrialized environments while others come from traditional rural settings totally unlike modernized U.S. society. The cultural diversity among LEP persons presents a broad array of language groups, as well as a myriad of different values about time, world view, interpersonal relations, learning style, and attitudes toward education, family, age, and occupations.

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[1] These examples are adapted from Kathleen Troy, "ESL Literacy Program Planning: Looking for Common Ground," *TESL Talk*, vol. 20, No. 1, 1990, pp. 318-329; and California Advisory Council on Vocational Education, *Horizon: An Overview of Vocational Education and Employment Training Services for Limited-English Proficient Persons in California* (Sacramento, CA: n.d.).

[2] These descriptions adapted from California Advisory Council on Vocational Education, op. cit., footnote 1, p. 30.

Box 3-B—Learning Disabilities Among Adults

A typical volunteer literacy tutor might spend 1 or 2 hours a week helping an adult learn to read. But how many tutors, like this one, feel baffled by the lack of progress their student is making?

> I've been working with Marty for 8 months now. He tries really hard, remembers to bring his books, and is faithful about meeting me at the library for our weekly sessions. I keep wondering though, it's like I'm not sure if he's making that much progress. . . . He rubs his eyes a bit and sometimes I have to repeat directions. I thought Marty would be doing much better by now, maybe even reading the newspaper. What can I do to really see where Marty is and where he can go?[1]

Chances are Marty is one of many adults who have a learning disability that interferes with learning to read. The term "learning disabilities" did not become popularly used until the 1970s when Public Law 94-142 (The Education for All Handicapped Children Act of 1975) established guidelines for serving learning disabled children in the public schools. But little is known about what happens to learning disabled children when they become adults and how learning disabilities affect people throughout their lives. Many adults in the general population went through the school system before learning disabilities were diagnosed and services provided. There is growing agreement that literacy providers need to understand learning disabilities, not only in order to plan programs for these students, but also to be able to make appropriate referrals to other agencies and resources.

Although there is no universally recognized definition of learning disability, the most commonly accepted definitions all refer to a substantial discrepancy between an individual's intellectual ability and his or her academic achievement for which there is no other basis such as sensory or motor disabilities. Many definitions also refer to difficulties with basic learning processes such as attention, memory, and integration. Learning disabilities can affect reading, writing, language, and/or mathematical abilities.[2]

Most research on learning disabilities has focused on children, and estimates of the size of the population vary because of problems associated with defining and diagnosing this problem. In a 1987 report summarizing available data, the Interagency Committee on Learning Disabilities concluded that 5 to 10 percent is a reasonable estimate of the portion of the general population affected by learning disabilities.[3] Learning disabilities are not uniformly distributed across the population; evidence suggests that they are found more often in males and in socioeconomically disadvantaged populations.

The rate of learning disabilities could be quite high among certain segments of the population. Some experts have suggested that the rate of learning disabilities may be especially high in adults whose reading skills are below the 8th-grade level. These estimates suggest that anywhere from 30 to 80 percent of these "poor readers" who enter literacy programs may have learning disabilities.[4]

Large numbers of adults who attend literacy programs, therefore, may have unrecognized learning disabilities. Some point out that, for adults, learning disabilities can make adjustment to other aspects of life—such as work and social relationships—especially difficult. However there is also ". . . considerable knowledge accumulating about (1) how to assess for learning disabilities and (2) how to create positive learning environments for the learning disabled . . . it is generally felt that learning disabled persons can be taught basic skills and can learn to overcome (but not eliminate) their disabilities."[5]

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[1] Donald Keefe and Valerie Meyer, "Profiles of and Instructional Strategies for Adult Disabled Readers," *Journal of Reading,* VOL 31, No. 7, April 19S8, p. 614.

[2] Jovita Martin Ross, "Learning Disabled Adults: Who Are They and What Do We Do With Them?" *Lifelong Learning: An Omnibus of Practice and Research,* vol. 11, No, 3, 1987, pp. 4-7, 11.

[3] Interagency Committee on Learning Disabilities, *Learning Disabilities: A Report to the U.S. Congress* (Washington, DC: Department of Health and Human service% August 1987), cited in U.S. Department of Labor, Office of Strategic Planning and Policy Development, The *Learning Disabled in Employment and Training Programs,* Research and Evaluation Report Series 91-E (Washington, DC: Us. Department of Labor, 1991).

[4] U.S. Department of Labor, op. cit., footnote 3, p. 2S.

[5] Ibid., p. 54.

Box 3-C—Profile of Yuvette Evans[1]

Yuvette Evans is a 26-year-old single parent of 9-year-old Jessica and 5-year-old Jarvis. They live in a public housing project in an inner-city neighborhood of Knoxville, Tennessee. Her apartment is small and sparsely furnished. She does not like the community, chooses not to have contact with her neighbors, and keeps her family in the house most of the time. Except for one or two friends and her boyfriend, Yuvette has little social interaction or support.

Yuvette works 20 to 30 hours a week as a waitress at a chain restaurant from 5 p.m. until 9 p.m. or sometimes until midnight. Her children go to a babysitter while she works. She is proud of being able to work and earn money for the things the family needs, to "... pay out of (my) pocket instead of somebody else doing it." Her AFDC payment is small, and Yuvette works hard to try to lift her family out of poverty.

Yuvette spends much effort meeting the needs of her children. Jessica is in elementary school and Jarvis attends a Head Start program in the afternoons. Both children have experienced speech problems; Yuvette has sought help for these problems and is supportive of the children's schools. Although she feels that she was not as involved as she should have been in the early years of her daughter's schooling, she is working hard to stay involved now. Yuvette has dreams for her children; more than anything, she wants them to be free from the need for government assistance. Yuvette pins that hope on education, believing that graduation will mean a good job.

Although she liked elementary school and got good grades, Yuvette reports that her later school years were characterized by social isolation and disconnectedness. She completed most of the 12th grade and got grades that were "ok" despite having had Jessica at age 16. However, because she moved to Atlanta with her mother during the 12th grade, Yuvette never completed requirements for a diploma.

In the past 8 years, Yuvette has enrolled in three separate adult education programs, but has not gotten her general equivalency diploma (GED). Multiple moves interfered with completion of the first program; in the second, a Job Training Partnership Act program, she reports not feeling integrated or engaged with the teacher or other students. The third program was an Even Start class, provided to parents of young children. Yuvette enjoyed this class which emphasized group work and cooperation. However because it met every morning from 9:30 to 12:30, Yuvette found she had little or no time with her children. "I tried to do both of them (work and go to school). If it was just me I'd do both. But I've got Jarvis and Jessica. If I do both, I'm not gonna be having time for them." She quit the program, but hopes to find a way to go back and remains confident that she can succeed in a GED program: "I like math and I am good at spelling. I can read, I made it to the 12th grade!"

Although Yuvette says she does not particularly like to read, she does read when necessary; she readily uses mathematics in shopping activities and on the job. Literacy skills do not appear to be a barrier to the things she attempts in her life. Yuvette does not have a car or a driver's license. She usually depends on herself to figure things out in her own life and sees herself as having little power to affect what happens in the "outside" world. Although she occasionally watches the news on television, Yuvette does not read books, newspapers, or magazines. She has never voted and does not seem interested in current events.

Yuvette's most immediate dream has been to purchase a few things for her bare apartment. She has acquired a new couch, chair, and television through a rent-to-buy program and hopes to be able to follow through until she owns them. Her heartfelt desire to have this couch and chair has, however, saddled her with a debt and with the decreased ability to stop working long enough to participate in a program that will help her prepare for her GED. Raising her children in a positive and loving way, completing her GED, and finding skilled employment that pays above survival wages are important goals for Yuvette. Despite her social isolation and poverty, she has managed to hang on to these dreams and is working to make a better life for her children.

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1 Adapted from Center for Literacy studies, University of Tennessee, Knoxville, "Life at the Margins: Profiles of Adults With Low Literacy Skills," OTA contractor - - 1 9 9 2 . The names of "individuals have been changed.

deliberate and time-consuming steps to try to secure good schooling for them.

Strategies for Literacy

Despite their low literacy skills, many adults have developed a rich and diverse array of strategies for adapting to the literacy demands of a print-based society and for learning new skills in their daily lives. The Office of Technology Assessment's (OTA) profiles of adults suggest a number of strategies that adults with low literacy skills use to cope with daily life. Some people rely on others to help, and develop social networks based on reciprocal exchange. Many people have worked out a variety of ways of managing in which they do not depend on others; such strategies of self-reliance include learning the routine formats of bills and forms, making educated guesses, and using written text for specific purposes such as writing down words to look up in a dictionary (see box 3-D). Avoidance of situations where literacy or language demands exceed skills is an important strategy for many. Still others, particularly non-native speakers of English, use technology for information and communication,

LEARNING IN ADULTHOOD

Much of what is known about learning comes from studying children in schools. In contrast, little is known about the process of learning that continues once a person leaves school. Adults continue to learn throughout their lives. Transitions in life stages and changing life conditions often provide the impetus for much of this learning.

Some researchers have examined how adults learn in the various arenas of their lives, particu-

larly the workplace. One of the most consistent findings of the research on literacy acquisition among adults is that a person's literacy skills vary as a function of different settings (e.g., work, school, and home) in which he or she develops and uses those skills. Evidence indicates that work-related literacy demands and uses are very different from school-related ones, and that experienced workers are much more skilled at on-the-job problem solving using reading, writing, and mathematical skills than at pencil-and-paper tests measuring the ''same' operations. One line of research has looked at on-the-job reading and writing demands.[8] This research has several consistent findings.

- Workers in most types of employment do considerable job-related reading. The average times reported in different studies range from 30 minutes to 2 hours per day. When workers' literacy activities were compared with those of high school and technical school students, workers' average daily reading time of 113 minutes was found to be higher than that of students in school.[9]
- Job-related reading is primarily "reading-to-do" (as opposed to "reading-to-learn," which is the primary purpose of school-based reading).

Workers read and write to accomplish tasks, solve problems, and make evaluations about the usefulness of material. . . . Students in secondary schools read primarily to obtain information needed to answer teacher questions.[10]

Work-related literacy demands are strongly repetitive and contextualized, and related to knowledge that the worker already has. Workers have repeated opportunities for reading and

[8] See, for example, Thomas G. Sticht et al., Human Resources Research Organization "Project REALISTIC: Determination of Adult Functional Literacy Skill Levels," *Reading Research Quarterly,* vol. 7, No. 3, 1972, pp. 424-465.

[9] Larry Mikulecky, "Job Literacy: The Relationship Between School Preparation and Workplace Actuality," *Reading Research Quarterly*, vol. *17, No. 3, 1982,* p. *418.*

[10] Larry Mikulecky and Jeanne Ehlinger, Institute for the Study of Adult Literacy, Pennsylvania State University, "Training for Job Literacy Demands: What Research Applies to Practice, " unpublished report, 1987, p. 4.

Box 3-D—Profile of Sokhhoeun[1]

Sokhhoeun is a 38-year-old Cambodian refugee who arrived in the United States in 1981 after a grueling 6-year odyssey with his family through Cambodia and northern Thailand. He now lives in Oakland, California, with his wife and three children, ages 13, 11, and 9. Members of his extended family, as well as many other Cambodians, live in the area. Most Cambodian immigrants in the area are members of a formally structured community mutual support system; Sokhhoeun is the designated leader for his neighborhood, 1 of 15 in Oakland.

Sokhhoeun grew up in rural areas of Cambodia and spent most of his childhood helping his father who was a rice farmer. He had no formal schooling until the age of 13, when he was sent for 2 years to a Buddhist temple to study as a monk. Formal instruction in Buddhist doctrine was conducted by oral transmission, followed by exposure to the corresponding written texts. After a few months time, Sokhhoeun learned to read and write the Cambodian (Khmer) language.

At age 15, his education ended when Sokhhoeun moved with his family to a region of Cambodia known for its diamonds; they worked as diamond prospectors in isolated forested areas for 8 years. Sokhhoeun was married at 18; his first child was born several years later. In 1975, when the Khmer Rouge took control, Sokhhoeun and his family were forced to become laborers in a sugar cane plantation. After 1979, the family began traveling in search of food and eventually reached a refugee camp in Thailand where they applied for resettlement in the United States. Once Sokhhoeun found out they had been selected, he began to study English—paying for lessons from another refugee in the camps for 3 months until they left for San Francisco.

Sokhhoeun enrolled in a refugee English as a second language (ESL) literacy program when he first came to the United States, and stayed in it for 6 months. This experience added considerably to the very limited English speaking and listening skills he had acquired in the refugee camp. A year later, he enrolled in a bilingual (Chinese-English) vocational training program in electronic assembly. Because he does not speak Chinese, the program was not very helpful; before the end of the program he found a job as a stock handler in a warehouse. After being laid off and falling ill, he volunteered with a refugee resettlement agency, helping newly arrived refugees connect to social service agencies. He was soon invited to work at the agency as a bilingual teacher's aide in the ESL literacy program. He has held this job for 6 years.

When he first arrived in this country, Sokhhoeun relied heavily on a Cambodian friend to apply for identification papers, a Social Security number, refugee cash assistance, and medical care. In order to become self-sufficient as quickly as possible, Sokhhoeun developed an important strategy: he decided to make copies of all forms that were filled out for him before turning in the forms. "I have to watch them (his friends). How can they do . . . the word they use . . . or whatever. Then, after he help me to fill out the form . . . I take it home . . . I just make a copy first. That's my idea. . . . Then later on . . . if I want to do that again, I know, oh, maybe I can make copy from the old one. . . . Because I didn't know the English, I cannot read the English. But if I have a copy, I can follow, I can copy do the same thing."

Sokhhoeun does not read much for pleasure; most of the written materials he encounters are in English. His English reading at home is limited to a Cambodian-English medical dictionary that he studies to expand his medical vocabulary. Although he hopes one day to become a medical translator in a hospital, he does not seem to have clear ideas about the educational steps necessary to achieve these goals. He watches the television news regularly but seldom reads newspapers. Within 6 months of his arrival, he had learned to drive a car and purchased one. He has a bank account and has recently mastered the use of the bank teller machine.

When learning new skills, such as using the bank machine or driving a car, he reports a consistent pattern that helps him master new skills. First he asks someone to describe the procedure and demonstrate it. Then he performs the task, under their supervision, usually several times. He then writes down the steps. Next he performs the task repeatedly on his own, until he is comfortable with it. The next time he must perform the task, he uses the written text to refresh his memory. Thus, for Sokhhoeun, text serves a very practical purpose: to make information permanent and to retain it for future retrieval.

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[1] Adapted from Center for Literacy Studies, University of Tennessee, Knoxville, "Life at the Margins: Profiles of Adults With Low Literacy Skills," OTA contractor report, March 1992. The names of individuals have been changed.

re-reading the material, and their job experience provides them with knowledge that helps them understand the written material.

■ When researchers administered general reading tests and job-related reading tests, they consistently found that workers score two or more grade levels higher on the job-related reading.[11] Workers' skills at reading on the job are affected by factors other than general reading skill: e.g., knowledge of concepts, familiarity with vocabulary, and a need to know key terms.

■ General literacy skill is only one small factor in job performance. Several studies have found that literacy skills did not account for differences among those who were more or less skilled at their jobs.[12] Results suggest that thinking and organizational skills are more important than reading and writing skills per se:

> ... superior job performers differ from their less able counterparts in their ability to think through what is needed on the job and then to apply reading and writing abilities to complete these job tasks efficiently. Superior workers know when to skim, when to look for new information, how to decide which information to jot down, how to compose meaningful messages to co-workers, when to check a reference, and how to find ways to organize notes and information to better do their jobs.[13]

A lot has been learned about cognitive and literacy activities on the job from detailed and systematic observations of workers in a milk processing plant.[14] How do workers develop strategies for solving familiar job problems? In one example, researchers recorded observations of product assemblers filling mixed case and unit orders. Assemblers often did not literally follow the written order. Instead they found efficient mathematical solutions to solve the problem even though these solutions required that the workers switch from one base number system to another. Errors were virtually nonexistent for experienced assemblers. In contrast, novices and students made more mistakes and often followed literal solutions that involved many more transfers.

The researchers found that experienced workers had creative and sophisticated solutions to commonplace problems. Workers found new ways to solve old problems. The investigators conclude:

> Since creativity is a term ordinarily reserved for exceptional individuals and extraordinary accomplishments, recognizing it in the practical problem-solving activities of ordinary people introduces a new perspective from which to grasp the challenge of the ordinary.[15]

But when the same workers who were so accurate and sophisticated in their mathematical skills on the job were administered paper-and-pencil arithmetic tests, they made many errors on problems similar in format to those they solved so well on the job.

This research identifies some of the ways skills such as reading, writing, and mathematics are commonly used in everyday settings to solve problems (see box 3-E). It also suggests that the difference between skilled and effective workers and novices may lie more in their ability to

[11] William Allan Diehl, Indiana University, "Functional Literacy as a Variable Construct: An Examination of Attitudes, Behaviors, and Strategies Related to Functional Literacy, " unpublished Ed.D. dissertation 1980, p. 251.

[12] Larry Mikulecky, "Literacy Task Analysis: Defining and Measuring Occupational Literacy Demands," paper presented at the Adult Education Research Conference, Chicago, IL, 1985, p. 12.

[13] Mikulecky and Ehlinger, op. cit., footnote 10, p.11.

[14] Sylvia Scribner, "Studying Working Intelligence, " Everyday Cognition: Its Development in Social Context, Barbara Rogoff and Jean Lave (eds.) (Cambridge, MA: Harvard University Press, 1984), pp. 9-40; and Sylvia Scribner, "Thinking in Action.' some Characteristics of Practical Thought, ' Practical Intelligence: Nature and Origins of Competence in the Everyday World, Robert F. Steinberg and RK. Wagner (eds.) (Cambridge, England: Cambridge University Press, 1986), pp. 13-30.

[15] Scribner, "Think@ in Action, " op. cit., footnote 14, p. 28.

Box 3-E—Profile of Tom Addington[1]

Tom Addington is a 27-year-old farm laborer who lives with his wife and three young children in a rented four-room frame house in rural Virginia. He describes himself as a family man and his children, ages 5, 3, and 2, are very important to him. Tom works as a member of a crew that hires out for tobacco farming. He also does other seasonal farm work and gathers ginseng for sale. At present, he is paid by the hour or in exchange for rent but next year he hopes to raise his own crop of tobacco "on shares" (since he owns no land of his own).

Tom's home has few amenities—there is no water and no bathroom in the house. He operates largely in a cash economy. He has never had a bank account and does not file a tax return, except to get low-income credit if he has been paid by someone who withholds. The family receives Food Stamps and help from the Women, Infants, and Children (WIC) program, a U.S. Department of Agriculture supplemental food program. Although Tom has owned vehicles, he traded them because he has never been able to get a driver's license due to his low reading skills. In an area where the only public transportation is school buses and the shopping town is 20 miles away, not being able to pass the driver's license test is a serious problem. To shop, go to the doctor, or visit their child's school, Tom and his wife must catch a ride with family members who live nearby.

Most of Tom's life is taken up with work and he seems particularly motivated to meet the needs of his children: "I love my kids, very much. . . . And I guess the biggest majority is taking care of them. I don't mind that too bad 'cause if a man's gonna amount to anything he's got to get out here and work for it. . . . It's kinda hard on me every day 'cause, you know, I never know where I'm gonna get ahold of the next penny at."

Tom has lived in rural Scott County most of his life. He dropped out of school when he was 17 and "taking 9th, 10th-grade subjects." Tom feels resentment toward school because he never learned to read well: ". . . they just passed me to get rid of me . . . they wouldn't try to learn me nothing so I just quit goin'. . . . I was willin' to learn how to read, grow up to be you know maybe something better than what I am now besides doin' farm work, maybe you know be on a public job makin' good money, something like that, doin' carpenter work or something."

Tom's reading is limited to recognizing key words such as those he encounters on food labels, familiar bills, prices, and road signs. He cannot read the newspaper. The only writing he does is when he signs his name. He relies on his wife to read the mail and read to the children. When he encounters situations where reading would be helpful, he relies on others to explain and demonstrate what he needs to know. Tom feels more confident about his mathematical skills and uses mathematics in practical problem solving. He explains how he estimated his bid for cutting a field of tobacco: "You count one row . . . and if you got, say, 100 sticks in a row, and you got 20 stick rows, that'd be 2,000 sticks . . . some rows might have a stick shorter or somethin' like that, and we guess at it a little bit."

Tom also estimates the rate to apply soda and fertilizer to a piece of land for tobacco at the rate of 500 pounds of soda and 1,500 pounds of fertilizer to the acre. Since plots of farm land are often irregular, it requires a good eye and a lot of practice to make good estimates. The agricultural extension agent confirmed the practical problem-solving abilities of farmers like Tom: "They've got it upstairs, using human computers."

Tom's work involves skills such as driving a tractor and spearing tobacco. It also involves technical knowledge. He knows what needs to be done to grow tobacco and in what sequence. He uses agricultural chemicals and determines how much is needed. He has skills as a mechanic. He gardens and knows his environment as a hunter and an herb digger. In none of these areas did his knowledge come from literacy and schooling.

Tom's only schooling as an adult occurred when he spent 7 months in Richmond in a correctional institution after he was "in a little bit of trouble." There he had classes in mathematics, English, science, and spelling. He felt pleased with the experience, but was surprised to learn he was only at the 3rd-grade level. Although he thinks about getting more education, he feels he does not have the time; in addition he feels: "I'm kinda bashful you know 'cause I just won't let anybody come in and try to learn me to read, something like that, 'cause I know it makes them angry and I get angry and just don't want to do nothing."

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1 Adapted from Center for Literacy Studies, University Of Tennessee, Knoxville, "Life at the Margins: Profiles of Adults With Low Literacy Skills," OTA contractor report, March 1992. The names of individuals have been changed.

Box 3-F—Assessing Progress: Learners and Tests

Tests and other evaluation tools are used in literacy programs for many different purposes. The most stringent evaluation requirements—often requiring the administration of standardized tests to all learners before and after participation in the program—are usually imposed by funding agencies who want to know what they are getting for their money. "Accountability is seen by many as the principal driving force behind the surge of interest in evaluating literacy projects."[1]

Evaluation serves many other important functions. Teachers and administrators can benefit from program evaluation and the opportunity to examine what works and what does not within the program. Tests often are used as a basis for decisions about admitting or placing learners—helping to match learners to programs at the right skill level. In addition, tests are sometimes used to make "discharge" decisions—certifying that a student has successfully completed a program and is ready to move on to the next step. Credentials such as the general equivalency diploma, which may be required by some employers, require a test in order to certify the learner's achievements.[2]

But probably the most important reason for conducting evaluations in literacy programs is that learners want to know how they are progressing. At the Technology for Literacy Center in Minnesota, learners were asked on their initial visit: "What will keep you coming back to this program?" Over 80 percent of the learners said: "I know I'm making progress."[3]

Unfortunately the types of information that can be most valuable to the learner are often not the kinds of information collected for accountability and program evaluation. For one thing, the kinds of progress that may be most significant to learners—an increased sense of self-esteem or self-sufficiency, for example—are hard to measure concretely. In addition, because different learners have different goals, the one or two measures chosen by the program may not cover important gains made in other areas.

For many adults with low literacy skills, taking standardized tests can be an experience fraught with anxiety and memories of past school failures. One learner described the experience of taking the Test of Adult Basic Education (TABE) before entering a program:

> . . . we had maybe 40 people [taking the TABE at the same time]. There was a break in the middle and maybe only half came back. That was so sad. They didn't feel they could finish that."[4]

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[1] Mlyn C. Turner, "Conducting Evaluation in Adult Literacy Program: Issues and Recommendations," paper presented at the Midwest Research-to-Practice Conference, St. Paul, MN, Oct. 3-4, 1991.

[2] For further discussion of the roles of literacy tests see Richard L. V', "Matching Literacy Testing With Social Policy: what Are the Alternatives?" policy brief PB 92-1 (Philadelphia, PA: National Center on Adult Literacy, May 22, 1992).
3~,~.d~,footnoteLP"3"

[4] - c Turner and Stacey Hueftle Stockdill (eds.), The Technology for Literacy Project Evaluation (St. Paul, MN: The saint Paul Foundation, Inc., December 1987), p. 171.

perform practical problem solving than in their reading or computational ability per se.

Other studies of problem solving in everyday situations also show selective and creative approaches. One group of researchers studied problem-solving activities as people did their grocery shopping.[16] "Expert" shoppers (who ranged in formal education level from the 8th grade upward) used a variety of complex and fairly sophisticated mathematical calculations to aid in their decisionmaking in grocery stores. However, these same shoppers were then tested with a paper-and-pencil test on the same mathematical operations they had used in grocery shopping. Average scores were 59 percent on the arithmetic test, ". . . compared with a startling 98 percent—

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[16] Jean Lave et al., "The Dialectic of Arithmetic in Grocery Shopping," in Rogoff and Lave, op. cit., footnote 14, pp. 67-94.

Because standardized tests are designed to be used across many programs and types of learners, their content is often quite broad and general. "The nationally standardized and normed tests are not sensitive enough to the specifics of what is being taught in the program."[5] Because many learners have little time to attend programs and because individual goals are not necessarily covered by standardized tests, there is often very little increase in the standardized test scores of most adult learners. In addition, evaluators have noticed that participants often feel that they *have* made considerable improvement in their skills, despite the minimal gains that might register on the tests.[6] This can be a source of frustration for learners—programs allow them to set individual goals and stress learning in context, yet the tests do not reflect these same goals and emphases.[7]

Several recent developments offer new promise for meeting the assessment needs of adult learners. First has been a growing interest, throughout all levels of education, in alternatives to existing tests for assessing the learner's progress. Often called "performance assessment," these methods can range from interviews about goals and progress, self-evaluations, portfolios of works over time, oral performances, writing assignments, or projects. These methods offer the promise of providing rich information that is directly tied to the learner's goals and program of instruction. These methods can help make the evaluation of a learner's progress an integral part of the learning process and can help to sustain the motivation of learners. Whether such methods can also be adapted for use in program evaluation, accountability, or student certification is still an open question and will require considerably more research and development.[8]

A second promising development is the use of technology to administer tests. Computer-administered tests show considerable promise in reducing the anxiety associated with testing because of the privacy they offer. And because they are usually scored immediately, such tests can also reduce or eliminate the stresses associated with waiting for test results. In addition, computers can be used to administer "adaptive" tests, which adjust the questions to the skill level of the test taker, thus reducing the frustration caused by answering many questions that are too difficult. Perhaps all 40 students taking the TABE in the above example would have stayed to complete the test (and enroll in the literacy program) had they been able to take such an individualized test!

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[5] Thomas G. Sticht, Applied Behavioral and Cognitive Science% Inc., "Testing and Assessment in Adult Basic Education and English as a Second Language Program," report prepared for the U.S. Department of Education, Division of Adult Education and Literacy, January 1990, p. 11.

6 *see, for example,* Janice Lee Albert and Deborah D'Amico-Samuels, *Adult* Learners' *Perceptions of Literacy Programs and the Impact of Participation on Their Lives (Now* York, *NY: Literacy* Assistance *Center, Inc.,* August 1991).

7 See Hanna A. Fingeret and Susan T. Danin, *"They Really Put a Hurtin' on My Brain": Learning in Literacy Volunteers of New York City* (Raleigh, *NC: Literacy* South, January 1991).

8 For further discussion of these issues, see Us. Congress, Office of Technology Assessment, *Testing in American Schools: Asking the Right Questions,* OTA-SET-519 (Washington, DC: Us. Government Printing office, March 1992).

virtually error free-arithmetic in the supermarket. ' '[17]

Results of these studies suggest that available methods for assessing people's literacy do not give the full picture of what people can do. Just as research in cognitive science has indicated that knowledge and processes are intertwined, the research on everyday uses of literacy confirms that when the process (literacy as skill) is separated from the knowledge (everyday context), everyone looks much less skilled than they really are. This suggests that many people who perform poorly on paper-and-pencil tests may nevertheless be functioning adequately, or to their own satisfaction, in their everyday lives. These results also suggest the need for new kinds of literacy assessment methods; the trend toward developing performance assessments in education offers the promise of providing a broader and more complex picture of individual accomplishment (see box 3-F).

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[17] Ibid., pp. 82-83.

These findings about the importance of context in learning are highly congruent with the view of learning that has emerged from the cognitive sciences. This approach, which applies to both children and adults, challenges many of the traditional assumptions about learning on which most classrooms have been based.[18] The traditional model assumes that complex skills can be broken down into simple skills, each of which can be mastered independently and out of context. Not until all components are mastered can more complex thinking skills develop. Moreover, in this model, the teacher is the active partner in the educational process, imparting knowledge to a passive student as though filling an empty jug.

In contrast, the "constructivist" view of learning underscores the importance of the student actively constructing his or her own knowledge. This view of learning suggests the following principles to guide the design of effective learning environments: [19]

■ People do not easily or predictably transfer learning-either from school to "real life," from real life to classrooms, or from one subject to another. Educational experiences should help students transfer skills, concepts, and knowledge they have learned to new situations.

■ Learners are not passive vessels into which knowledge can be poured, but rather active participants in their own learning. "The student needs chances to engage in choice, judgment, control process, problem formulation; s/he needs the chance to make mistakes. We have an adage in our culture, 'Experience is the best teacher.' In other words, you learn when you do, a popular observation borne out by the research. Although not sufficient for effective learning, doing is necessary."[20]

■ Knowledge is acquired from experience with complex, meaningful problems rather than from practicing subskills and learning isolated bits of knowledge. "Human beings-even the small child-are quintessentially sense-making, problem-solving **animals**. . . . As a species, we wonder, we are curious, we want to understand. . . . Fractionated and decontextualized instruction fails to mobilize this powerful property of human beings in the service of learning. ' '[21]

■ Learners are not blank slates, but rather carry concepts and knowledge they have acquired elsewhere into the learning situation. "In other words, the teaching challenge is not to write on a clean slate. It is to confirm, disconfirm, modify, replace, and add to what is already written there. "[22]

■ Skills and knowledge are best acquired in context. Previously it was thought that in order to make skills and knowledge more generalizable, most learning should be general and separated from the context of everyday life. "Context, however, turns out to be critical for understanding and thus for learning. . . . The importance of context lies in the meaning that it gives to learning.' '[23]

ADULTS SEEKING LEARNING OPPORTUNITIES

Adults learn all the time, in all the arenas of their lives. For some adults, new roles and life transitions-becoming a parent, moving to a new

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[18] For further discussion see Lauren B. Resnick and Daniel P. Resnick, "Assessing the Thinking Curriculum: New Tools for Educational Reform," paper prepared at the National Commission on Testing and Public Policy, August 1989.

[19] These five principles and their discussion are drawn from Sue E. Berryman, Teachers College, Columbia University, "Cognitive Science: Indicting 'May's Schools and Designing Effective Learning Environments," unpublished manuscript, Apr. 24, 1991.

[20] Ibid., p. 4.

[21] Ibid., p. 8.

[22] Ibid., p. 9.

[23] Ibid., p. iii.

Box 3-G—Profile of Michela Stone[1]

Michela Stone is a 32-year-old single white woman refugee from Byleorussia in the western part of the former Soviet Union. Two years ago she emigrated with her father to San Francisco. In Russia she had completed a bachelor's degree in accounting and a master's degree in accountancy teaching. She had been teaching accounting and statistics in a college there.

Michela lives alone in a small apartment and she knows few of her neighbors. Her father lives nearby in government-subsidized housing. She currently works as a bookkeeper with a nonprofit community center for Russian emigres; although she speaks English with her coworkers, much of her job involves working with Russian emigres with whom she speaks Russian. Most of the people she knows are Russian and she feels part of the wider Russian community network. To supplement her income, she works 7 hours a week (one night and Saturday mornings) as a bookkeeper for a small dental practice. In addition, she still cooks and cleans for her father, leaving her little free time for community activities or education. Most of her free time is spent reading, both in Russian and in English.

When she first came to the United States, Michela spoke no English. At first, she made herself read English for 1 hour a day. She has also enrolled in several adult education classes: a basic literacy course focusing on developing skills in everyday situations, accounting, and two English classes. Initially, Michela carried a dictionary with her, ". . . always with me. For 2 years, in my purse." In general, she has little difficulty with written English. What she does not understand immediately, she remembers or writes down to look up when she gets home. She has had much greater difficulty learning to speak and understand spoken English.

When she first arrived in San Francisco, Michela worked as a cleaner in an apartment building and then did office work in a hotel. "People would tell me that I couldn't get a job as an accountant. You can get a job at a hotel or cleaning up someone's mess. Why they did that I don't know. It was mis-instruction. It made me think I was nothing." Her current job utilizes only some of her considerable job skills. Michela's goal is to improve her English so that she can pass the Test of English for Foreign Learners (TOEFL)—a test that non-native speakers must pass in order to enroll in college. "I'd like to be able to go to college here. Enroll in a business program. Get an MBA. Nobody thinks my MA from Russia is worth much. I took TOEFL once and scored only 10 below. . . . I'll certainly take it again when I have time to study."

Michela uses a number of strategies for improving her English and feeling more assimilated into American life. She watches television in order to gain cultural information about American life and to get ideas for conversation topics; although she doesn't have a VCR she thinks it would be nice to have one so that she could tape programs to discuss with her father and friends. Michela has also begun to teach Russian to three Americans: "We read and write and speak Russian and English. Maybe 1 hour, 2 hour a week. Then I learn something about American lifestyle. Cultural exchange. To meet American people, to learn something from them."

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1 Adapted from Center for Literacy Studies, University of Tennessee, Knoxville, "Life at the Margins: Profiles of Adults With Low Literacy Skills," OTA contractor report, March 1992. The names of individuals have been changed.

part of the country, taking a new job, developing a medical problem-precipitate new learning and the acquisition of new skills. Most people desiring to gain new knowledge or improve their skills probably do so informally, e.g., by reading books or listening to books on tape, watching television, setting up informal tutoring exchanges with a friend or relative, observing others, doing volunteer work, using the library, or attending lectures at community centers (see box 3-G). But some adults seek formal education through enrolling in courses or engaging a tutor.

Evidence shows that people most likely to benefit from adult education are least likely to participate in it. In 1990-91, a large-scale, nationally representative survey was conducted about the educational activities of adults in the United States. Thirty-eight percent of adults ages

17 and over reported participating in some educational activity during the 12-month period.[24] Findings included the following:
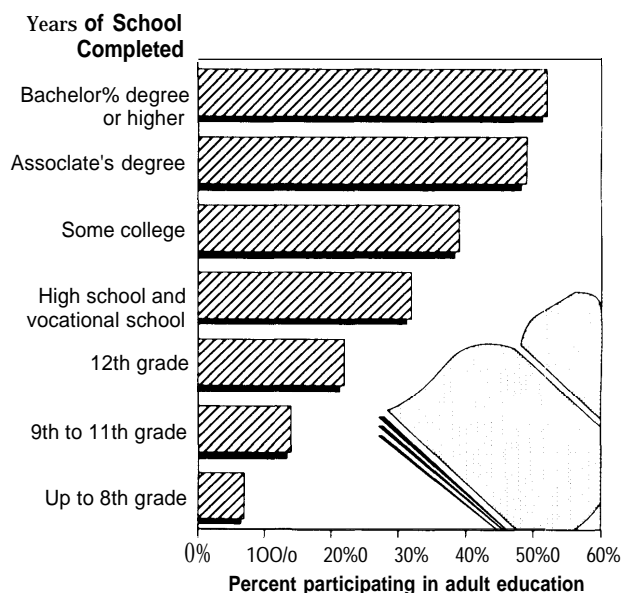
- People with jobs were more likely to participate than those who were unemployed or not in the labor force (41 percent as compared to 21 percent and 14 percent respectively);
- People with higher levels of education were more likely to attend (see figure 3-l);
- People with higher incomes had higher participation rates;
- Adults between the ages of 35 and 44 had the highest rates of any age group;
- Adults with children under 16 had higher rates than those with no children (37 percent as compared to 28 percent); and
- Men and women participated at the same rate.

These findings suggest that ". . . those who would benefit greatly from participation in some part-time educational activity seemed less likely to do so-that is, adults with a 12th-grade education or less, who were not employed, or whose households were at the lowest income levels. ' "[25]

The Decision to Participate in Adult Literacy Education

Adults entering literacy programs are significantly different from children in school. They are, for the most part, ''schooled. Most of them have had at least 7 years of schooling, many have had some high school, and some have graduated from high school, but without proficiency in reading or other basic skills. Furthermore, these adults enter the classroom with a wealth of life experiences that reframe and often screen both their perceptions and their participation in the learning experience. They usually are volunteer learners, and face issues of entry and commitment many

Figure 3-I-Percentage of Adults (17 and Over) Participating in Educational Activities During 1990-91, by Current Education Level

Years of School Completed

NOTE: "Educational activities" include all full- and part-time formal and informal educational experiences in which adults participated over the 12-month period preceding the survey. This includes enrollment in college, vocational training, GED instruction, English as a second language, and any other type of education or training provided by any type of provider including colleges and universities, employers, community organizatbns (e.g. library, museum), and State and local agencies. Those still attending elementary or secondary school were excluded from the survey.

SOURCE: Roslyn Korb et al., U.S. Department of Education, Nat ional Center for Education Statistics, "Adult Education Profile for 1990-91," NCES #91-222, September 1991.

times in their adult lives as they drop out of and reenter programs. These adults have a strong sense of self, an emotionally laden history of past learning experiences, and a complex set of motivations.

Why do more adults not enter literacy programs? What factors affect their decisions to seek educational opportunities?

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[24] The survey did not include those enrolled full time in high school.

[25] Roslyn Korb et al., Us. Department of Education, National Center for Education Statistics, "Adult Education Profile for 1X91, " NCES 91-222, unpublished report, September 1991, p. 2.

There was . . . a period of waiting to hear where and when to go to class, telephone calls and letters back and forth between Ms. Altman and the program, before she was finally told where to come to begin instruction. That first night, Ms. Altman remembers, "I sat in my car. I was supposed to be in at 5:30. I sat in my car until 6:00 because I was afraid to go in. Finally, I got enough nerve to go in and when I walk in [the center director] was very nice and she says, 'Rose your tutor is not here. You're gonna have to wait another two weeks before you can attend class.'"[26]

Making the initial decision to visit a literacy program or attend the first class can often be a very difficult hurdle for adults with low literacy skills. Several interview studies suggest that a tremendous amount of courage, as well as social support from others, is required.

> Making the call and entering the program was stressful for everyone we talked with; it required great courage, trust, and, sometimes, overcoming obstacles such as finding money for carfare or childcare, negotiating with spouses and maneuvering through unfamiliar subway and bus routes. Family members and close friends are often key to students moving forward.[27]

A number of researchers have underscored the importance of the first meeting in determining whether or not adults continue in adult education. One researcher states: "This is the stage when many under-educated participants drop out . . . and it calls for assurance that the first class session will be a positive experience."[28] Many programs have begun to change how they de-scribe and advertise their programs in order to encourage people to enter. The workplace literacy program started by the United Auto Workers and Ford, for example, has discovered the importance of physically leaving the classroom door open at all times, despite considerable noise from the machinery in the plant. Prospective students, they discovered, were reluctant to venture into the program when they could not see what they were walking into.[29]

Several factors that make it difficult to enter into learning programs include:

Shame and embarrassment about revealing a long kept secret. "Illiteracy" in this country is a stigma that carries with it many negative stereotypes.[30] Many adults have learned to compensate for their lack of reading skill by covering up and passing as literate. Enrolling in a literacy program effectively "blows one's cover" since it requires public disclosure. For example, one participant challenged her interviewer:

> I don't know if you remember the first time you ever met somebody that didn't know how to read. First they were speaking to you like anybody and all of a sudden they say "You know I can't read." Did your expression change? Did you think differently about them? A lot of people do when you tell them I can't read. All of a sudden . . . now you're a dumb idiot. Before you were someone to have a conversation with, but after you told them that they totally changed their opinion and you could hear it in their voice, you could see it in their face.[31]

Painful past experiences with schools and teachers. Most people with low literacy skills

26 Hanna Arlene Fingeret and Susan Tuck Danin, *They Really Put a Hurtin' on My Brain: Learning in Literacy Volunteers of New York City* (Raleigh, NC: Literacy South, January 1991), p. 41. Fortunately, the center director worked out an arrangement so that Ms. Altman could begin more quickly.

27 Ibid., p. 39,

28 Linda K. Bock, "Participation," *Developing, Administering and Evaluating Adult Education*, Alan B. Knox and Associates (eds.) (San Francisco, CA: Jossey-Bass, 1980), p. 127.

29 See ch. 4 for further description of the United Auto Workers/Ford workplace learning program.

30 Hal Beder, "The Stigma of Illiteracy, " *Adult Basic Education*, vol.1, *No. 2*, summer 1991, pp. 67-78.

31 Fingeret and Danin, op. cit., footnote 26, p. 151.

have not experienced success in school situations. "For many, public school is associated with shame and pain from the time they were young. ''[32] Some, like Tom, describe not being able to learn or understand but being passed on through the system:

> I wasn't learning nothing, they just passed me to get rid of me. They'd send me down on the ball field, rake the ball field off or tell me to go to sleep or something or other. . . . Seemed like they didn't have enough patience so I just quit goin'. I wasn't learnin' nothin'. They wouldn't try to learn me nothing so I just quit goin'. . . . They ought to took their time 'cause I was willing to learn. They ought to took their time to learn me but they didn't seem like they cared that much.[33]

Although most students have painful past experiences with schooling, they are affected in different ways: some retain negative self-evaluations of themselves as learners, some do not believe in the usefulness of education, and some remain reluctant to subject themselves to schools and teachers once again.

The threatening nature of change. The decision to enter a literacy program often is the culmination of a long period of personal struggle. ''Even after they have admitted to themselves that they need to develop better literacy skills, it can be years before someone enters a program. ''[34] Deciding to come usually means the participant is deciding to change something about their life-to be different than they are now.

> In the future I would like to go to school because I would like to have something more meaningful

than a factory job. If I go to the school, I want to try to find some interesting job-you know--to learn how to get some more money doing something different because I need to be some other woman, you know. I don't want to be the same all the time.[35]

Often the decision to enter a program cannot be attributed to a single event, but is part of a larger process of change or life transition. Losing a job, confronting alcoholism, breaking up an intimate relationship, or having one's children begin school can lead to changing roles and life choices. "As adults move through the life cycle, new motivations to learn are constantly being generated by the need to perform new roles. ''[36] While deciding to address a literacy problem can be associated with a sense of hope and empowerment, it can also trigger fear of failure or of being incapable of realizing one's dreams. Researchers have also suggested that improved literacy can be a threat to the balance of power in a family or between a couple.[37] Improved literacy can alter the stability of the person's current life situation. One learner describes it in this way:

> At first my husband didn't approve. He would say, "You're always going out; you read too much; you think you know everything. " . . Because I couldn't read, I was more dependent on him. When I learned to read he lost something because I didn't need him so much. I think it was something like what can happen when an alcoholic stops drinking.[38]

Fear of job loss. Many prospective learners express a fear of reprisal such as job loss if employers learn about their true literacy skills.

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32 Ibid., p. 31.

33 Center for Literacy Studies, op. cit., footnote 1, p-19.

34 Fingeret and Danin, op. cit., footnote 26, p. 35.

35 Kathleen Rockhill, "Literacy as Threat/Desire: Longing to be SOMEBODY," *ESL Literacy: Theme Issue of TESL Talk,* Jill Bell (cd.), vol. 20, No. 1, 1990, p. 104.

36 Hal Beder, *Adult Literacy: Issues for Policy and Practice* (Malabar, FL: Krieger Publishing Co., 1991), p. 50.

37 Rockhill, op. cit., footnote 35.

38 Kathleen A. Fitzsimmons, "African-American Women Who Persist in Literacy Programs: An Exploratory Study," *The Urban Review,* vol. 23, No. 4, December 1991, pp. 245.

Fear of supervisor punishment has been identified as a deterrent to participation in a number of workplace literacy programs.[39] Some of these programs have had to offer offsite classes or enlist union support to encourage employees to attend.

> I was kinda scared the first time when I couldn't read really. . . . I was kinda scared to talk to my boss actually about that because I thought she was going to fire me. So one day I told her I wanted to talk to her. So she was willing to listen and I tell her I have a reading problem. And actually she was very sympathetic with me. She helped mea

The Importance of Motivation

An adult's motivation is often quite high by the time they walk in the door of a literacy program.

> Motivation is the force which impels voluntary adult learners toward literacy education. When it is strong, adults can be expected to overcome the barriers to participation that life imposes. When motivation is weak participation is highly unlikely. It follows that if literacy programs can develop recruitment and instruction which is congruent with learners' motivations, success in attracting and retaining students will be considerably enhanced.[41]

A number of theorists and researchers have studied the motivations of adult learners. Although findings vary from study to study depending on populations studied and methods used, several general principles have emerged from this research.[42] Adults give a variety of reasons for participating in adult education. These motiva-

Adults turn to education for many reasons including helping their children with homework, getting a new job, reading for fun, or learning something new.

tions go well beyond a simple desire to improve basic skills or get a high school diploma. One review of the literature suggests that the goals reported in most studies can be grouped into three broad types: employment goals (to gain or upgrade employment), hopes related to children, and self-improvement.[43] In fact, one of the most frequently cited motivators for attending adult education is self-improvement, which includes reasons such as becoming a better person, wanting to learn new things, being more independent, becoming better informed. These self-improvement reasons appear to be equally, if not more, important than vocational motivators (e.g., getting a better job, making more money).[44] Motiva-

[39] Larry Mikulecky, ' 'Workplace Literacy Programs: Organization and Incentives,' paper presented at "Adult Learning and Work: A Focus on Incentives, ' a conference sponsored by the U.S. National Center on Adult Literacy, Nov. 4-5, 1991.

[40] Fingeret and Danin, op. cit., footnote 26, p. 39.

[41] Beder, op. cit., footnote 36, p. 39.

[42] For a more complete review of the research see ibid.

[43] Miriam Balmuth, Kingsborough Community College, City University of New York, "Essential Characteristics of Effective Adult Literacy Programs: A Review and Analysis of the Research," unpublished paper, 1986.

[44] Beder, op. cit., footnote 36. See also Clifford Adelman, U.S. Department of Education, *The Way We Are: The Community College as American Thermometer* (Washington, DC: U.S. Government Printing Office, February 1992),p.31. This report suggests that adults who attend community colleges ". . . are more interested in learning, in acquiring new skills, and in completing . . . basic general education than in advanced credentials, even if those credentials yield greater economic rewards.

tion also seems to be influenced by age and the learner's place in the life cycle. For example, diversion (a desire to dispel boredom) is given as a reason for participating by younger and older people, but less so for those in middle age. Concerns about professional advancement, in contrast, were highly motivating to those in middle age, less so in later years.[45]

Why People Do Not Participate

Most estimates suggest that somewhere between 5 and 10 percent of eligible adults have enrolled in federally sponsored literacy programs within the last year.[46] As the above section has demonstrated, the adult who shows up at an adult education program is likely to be highly motivated and has managed to overcome or set aside other potential barriers to participation. But what of the adults who never come? What do we know about those who do not participate in literacy programs? It is much easier to survey, observe, and interview adults who come to programs than the much larger part of the population who do not. Lack of information about nonparticipants is a major problem facing those who would increase participation rates.[47]

Some researchers have attempted to find out what the common barriers are to attending adult education classes. Most of these efforts are surveys that provide a list of possible reasons for not attending classes and ask adults to select the ones that apply to them.[48] This research is of limited generalizability, however, because it tells us only what people say keeps them from participating, which can be greatly affected by social desirability (e.g., it is easier and more acceptable to say cost and time are deterrents than to admit one is too anxious to try it or that one thinks education is worthless). Nevertheless this work has helped to illuminate the commonly cited reasons that people give for not attending.

Most of the research on barriers or deterrents to participation in adult education has been conducted with a broad range of adults, and does not focus on those with few skills. A synthesis of this general research suggests eight major types of deterrents:

"1. Individual, family or home-related problems (e.g., child care, poor health, transportation difficulties)

2, Cost concerns, including opportunity costs and lack of financial assistance

3. Questionable worth, relevance, or quality of available educational opportunities

4. Negative perceptions regarding the value of education in general, including those related to prior unfavorable experience

5. Lack of motivation or indifference toward learning (e.g., anomie, apathy)

6. Lack of self-confidence in one's learning abilities, including lack of social support/encouragement

7. A general proclivity toward nonaffiliation (e.g., marginal involvement in social activities)

8. Incompatibilities of time and/or place, especially those associated with conflicting demands of work. "[49]

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45 Beder, op. cit., footnote 36. See also K. Patricia Cross, *Adults* as *Learners* (San Francisco, CA: Jossey-Bass, 1981).

46 For example, see Hal Beder, "Nonparticipation in Adult Education," NCAL Connections, newsletter, winter 1992, pp. 4-5,

47 Gordon G. Darkenwald, Literacy Assistance Center, Inc., "Adult Literacy Education: A Review of the Research and priorities for Future Inquiry," unpublished report, 1986.

48 For example, survey items include statements such as: "I would feel strange going back to school," "I don't have enough free time to go back to school, " "School is too hard,"'"Ihaven't known where there are any classes," "I don't need a diploma," "My friends would laugh at me if I went back to school. " Hal Beder, ''Reasons for Nonparticipation in Adult Basic Education,'" *Adult Education Quarterly*, vol. 40, No. 4, summer 1990, pp. 207-218. For a review of these survey attempts see Beder, op. cit., footnote 36.

49 C.L. Scanlan, *Deterrents to Participation:* An *Adult Education Dilemma* (Columbus, OH: ERIC Clearinghouse on Adult, Career, and Vocational Education, 1986), p. 35.

Table 3-l-Factors Affecting an Individual's Decision to Participate in Adult Education

Internal factors	External factors
• Self-evaluation (especially beliefs about self as a learner)	• Attitudes of family and peers
• Attitudes toward education and school	• Life-cycle transitions/role changes
• Motivation and importance of personal goals	• Access to information about relevant educational opportunities
• Expectation that education can help with goals	• Situational barriers to participation: (e.g., time, money, transportation, childcare needs)
• Perceptions about the amount of effort required	• Institutional barriers (e.g., fixed schedules, registration requirements, course prerequisites)

SOURCE: Office of Technology Assessment, 1993.

Reasons for nonparticipation thus fall into two major groupings: reasons internal to the person and those that are external or in the environment (see table 3-l). Internal reasons (which have also been called dispositional or psychosocial) include attitudes and feelings about the usefulness and value of adult education and evaluations about oneself as a learner.[50] External reasons can be situational (cost, time, transportation), informational (not knowing about relevant opportunities) and institutional (issues under the control of the schooling institution such as scheduling, registration procedures, course prerequisites, and location of the classes).

Different barriers are likely to be more or less important to different kinds of people. For example, situational barriers tend to be associated with those who are married, have children, and hold a job. Cost factors tend to be cited by younger age groups, and adults of lower socioeconomic status tend to be more deterred by lack of information.[51] However, very little is known about which deterrents are most important and whether the elimination of those barriers would actually increase participation.

Of the situational barriers, lack of time seems to be most often and consistently cited by adults as a deterrent. ''Clearly, such proven strategies as varied and flexible scheduling, distance learning, and provisions for self-pacing will make education more accessible to adult learners. "[52] Other strategies for removing situational barriers might include providing childcare or transportation costs, locating learning sites near the workplace, providing better information about available resources, and so forth. Decisions about which situational barriers to remove-for example, by providing childcare-will depend on the specific groups being served by programs.

Because they are more concrete, situational barriers are often the easiest to remove or change through policy decisions. Attitudinal barriers may prove to be far more difficult and complex to address. Dislike for school, low perception of the need for education, and perceptions that a large amount of effort is required to make gains in adult education all reduce participation of those most in need. Strategies for removing some of these attitudinal barriers might include developing ways to encourage or motivate those who do not perceive a need or to convince learners that progress is possible and leads to desired outcomes. If dislike for school is a substantial deterrent to adults with low literacy skills, then educational programs may need to be "deschooled" and removed from some of the institu-

[50] G. Darkenwald and S. Merriam, *Adult Education: Foundations of Practice* (New York, *NY:* Harper and Row, 1982),

[51] Beder, op. cit., footnote 36.

[52] Thomas Valentine and Gordon C. Darkenwald, ''Deterrents to Participation in Adult Education: Profiles of Potential Learners, ' *Adult Education Quarterly,* vol. 41, No. 1, fall 1990, p. 40.

Los Angeles Times Learning Center

A lack of time or transportation prevents many adults from attending literacy classes. This classroom on wheels travels throughout Los Angeles bringing learning resources to adults in their own neighborhoods.

tional trappings of schools. Although these are all strategies worth exploring, no one really knows which, if any, will have the greatest impact on increasing participation rates.

MEETING ADULT LEARNER NEEDS: THE ROLE OF TECHNOLOGY

New **technologies offer** considerable promise in addressing the special concerns faced by adult learners who wish to improve their literacy skills. Technology can deliver instruction to learners in many new and different ways, whether they are computer-based, video-based (e.g., television and videotapes), or audio-based (e.g., radio, audio-tape, and telephone). Some of the promise of new

technologies reflects effects on increasing and sustaining motivation. Another plus is the possibility that instruction delivered via technologies may directly influence cognitive understanding—that is, help learners master new information better, more comprehensively, or more quickly. Other advantages come from the flexibility and efficiencies these new technologies offer to adults who have very small amounts of time to devote to learning.

Although those using technology to teach literacy have considerable anecdotal evidence of its effectiveness, very little empirical evidence is available to substantiate these claims. Some research evidence has accumulated about the

effects of technology on learning,[53] but much Of it is based on studies done with children. The research that has been done with adults comes primarily from higher education and military settings.

With these caveats in mind, then, the promise of technology for adults with low literacy skills can be described in a number of areas.

Reaching barriers Outside of Classrooms

Technology can facilitate the delivery of learning experiences in places other than classrooms. Adults can learn at times and places convenient for them; many situational barriers such as lack of transportation or childcare can be overcome by bringing instruction into homes and communities. Similarly, for many adults with low literacy skills privacy is important; learning in their own homes may offer a less stigmatizing way to obtain further education. Because of painful past experiences with classroom-based learning, some adults with low literacy skills may be more motivated to give education a ''second chance' if it can be delivered in nonschool-based settings, such as the home, libraries, or community centers.

Attempts to offer adults instruction that is more convenient has its roots in the correspondence course-a method invented in the late 19th century to provide instruction to learners unable to attend a class.[54] Communications media such as broadcast television and audio recording have long been used in corporate, military, and university continuing education sectors as a means to offer education at a distance. More recently new forms of telecommunications have offered new possibilities for reaching learners.[55]

But do adults learn as well or as effectively when taught at a distance? Is face-to-face instruction an inherently superior way of teaching or can other methods be just as effective? Most studies that have compared face-to-face instruction with other methods such as teleconferencing, video-based instruction, or instruction via radio and audiotapes have found that achievement gains made by students exposed to the technologies were at least equal to those made by students receiving face-to-face instruction.[56] In addition, although the research findings indicate that the absence of face-to-face contact is not detrimental to learning, the literature suggests that a requirement for successful distance education may be a carefully designed learner support system. In such a system students are supported by teachers who do things such as help students organize study time and develop study skills, provide diagnostic counseling and tutorial assistance when necessary, and monitor and help sustain student involvement and motivation for learning.[57]

Using Learning Time Efficiently

Technologies can facilitate more efficient use of precious learning time. Because they must juggle multiple roles and responsibilities, most adults have very little time to devote to learning. Many adults who have tried to participate in literacy programs find themselves unable to sustain their participation because of conflicting job schedules, family responsibilities, or transportation problems. Although they may have precious parcels of free time, these do not always occur when classes are scheduled. To sustain their motivation, many adults may need to take advan-

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53 See, for example, Jerome Johnston, Electronic *Learning: From Audiotape to Videodisc* (Hillsdale, NJ: Lawrence Erlbaum, 1987).

54 Michael G. Moore, ''Effects of Distance Learning: A Summary of the Literature,'' OTA contractor report, May 31, 1989.

55 See U.S. Congress, Office of Technology Assessment, *Linking for Learning: A New Course for Education,* OTA-SET-430 (Washington, DC: U.S. Government Printing Office, November 1989). Available from the U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4650; order #PB90-156969.

56 Johnston, op. cit., footnote 53; Moore, op. cit., footnote 54; and Saul Rockman, ''Learning From Technologies: A Perspective on the Research Literature,'' OTA contractor report, December 1992.

57 Moore, op. cit., footnote 54.

tage of these small segments of time or may be drawn to opportunities that offer other efficiencies such as learning while commuting, waiting in the doctor's office, or on a lunch break. Technology offers ways to deliver education at times and places that can maximize the efficient use of free time.

There are a number of other ways that technology can make learning more efficient. When a group of students sits in a classroom and learns from a teacher, the pace of instruction is set by the teacher. Some students could move at a faster pace, while other students, perhaps with less prior knowledge or with other needs, could benefit from a slower pace. Technology can allow students to master content at the pace that suits them best. For example, audio and videotapes of lectures allow students who need repetition to revisit the material until it is mastered, while other students move on to new materials. Features of computers and multimedia technologies can allow the learner to set the pace at which text is read or materials are presented. People can spend more time on things they do not understand, while moving quickly through those they have already mastered. A lecture or a broadcast presented at a fixed rate is understood by some learners but leaves some bored and others confused. Allowing the learner to control features such as pace, the need for repetition, and the need for extra explanation or feedback helps optimize time spent learning. This capacity of the technology is particularly important for adults, since they come to educational settings with an extremely wide range of life experience, knowledge, and formal schooling.

A review of adult education studies comparing computer-based education (CBE) to conventional instruction methods found positive effects on adult learners.[58] First, these CBE methods raised achievement scores by an average of 0.42 standard deviations-or the equivalent of an increase from the 50th to the 66th percentile. In addition, in 12 of the 13 studies that reported instructional time, the computer methods were faster; i.e., adults learners typically required about 70 percent of the time required by conventional teaching methods. These results suggest that, at least in general adult education, the learner can learn as much or more of the material in a shorter amount of time than with conventional methods.

A more recent review of interactive videodisc methods in the military, higher education, and industrial training suggests a very similar pattern.[59] Across 47 studies reviewed, results suggested that interactive videodisc instruction increased achievement an average of 0.5 standard deviations over conventional instruction, an increase from the 50th percentile to about the 69th percentile of achievement. Results also suggested that the more the interactive features were used, the more effective was the instruction. The average amount of student time saved across eight studies that looked at this factor was 31 percent. These results suggest that adults (in military, higher education, and training settings) learn more in less time with interactive videodisc methods. Studies to date are not detailed enough, however, to allow conclusions about whether factors such as self-pacing account for these efficiencies.

Sustaining Motivation

Technologies can enhance and sustain the motivation of adult learners. Many factors can deter an otherwise motivated adult from participating in a literacy program. Technology offers ways of protecting the privacy of learners. In addition to its capacity to deliver instruction outside of classrooms, technology offers other

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[58] C.C. Kulik et al., "**The** *Effectiveness* of Computer-Based Adult Education: A Meta-Analysis,'' *Journal of Educational Computing Research,* vol. 2, No. 2, 1986, pp. 235-252. See also Rockman, op. cit., footnote 56.

[59] J.D. Fletcher, Effectiveness *and* Cost *of Interactive Videodisc Instruction in Defense Training and Education* (Alexandria, VA: Institute for Defense Analyses, July 1990).

Computers offer privacy, self-paced instruction, and patient feedback-features that adult learners value.

privacy options. Working on computers, for example, learners no longer have to worry about making mistakes or feeling evaluated by teachers and peers. Computers are patient, nonevaluative tutors. But privacy need not mean isolation. Learners can use electronic networks, fax, telephones, and other distance technologies to share information and communicate with learners or tutors in other location-still retaining their anonymity but participating in new kinds of ''schools' and ''communities.''[60]

Educators working with technology have long been aware of a kind of "novelty" factor that improves the motivation of students working with technology. Learners, it seems, find technology a ''fun' **way** to learn and may also find it rewarding to master ''new machines. Adults with low literacy skills may particularly enjoy the opportunity to work with computers and gain experience with this important and pervasive technology. Some educators have also argued that computer methods also sustain motivation, because they can allow learning materials to be customized to meet the interests of individual learners. For example, a learner could scan a newspaper article of her choice into the computer; she could practice various assignments using content in which she is interested.

Multimedia technologies allow learners to branch off and explore ideas of particular interest.

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[60] Terilyn Turner, "Li- & Machines: An Overview of the Use of Technology in Adult Literacy Programs,'' unpublished manuscript, 1993, p. 7.

The computer's capacity to allow learners choices over content as well as provide immediate feedback on the learner's responses makes it particularly well-suited to maintaining the motivation of a student as he or she progresses. These features are particularly important for adult learners who often feel that learning is difficult and may need to re-experience themselves as successful learners.

Research on attitudes and motivation in relation to technology-based instruction is fairly limited, though many of the published conclusions seem to be positive. Some of the positive effects associated with computers may be novelty effects of using technology rather than the instructional potential of the delivery system itself.[61] Research with students from elementary to college age indicates that students enjoy using computers for several reasons: they like being able to make mistakes without embarrassment; they enjoy immediate, helpful feedback; and they like graphics and game formats. Some studies have suggested that computers are motivating because they give students the feeling of being in control. Other studies have suggested that computers contribute to students spending more time on a task, which in turn can contribute to higher levels of achievement.[62]

The benefits on motivation of factors such as immediate feedback, encouragement for correct answers, and being able to work on content of personal interest has long been known. The design of software that incorporates these features is likely to influence motivation and learning more than the effects of the technology alone. Good instructional software that builds on what is known about adult learning is likely to influence achievement and attitudes. Most available research cannot, however, distinguish among the various explanations for the motivating effects of technologies.

Individualizing Instruction

Technologies can offer opportunities to individualize instruction, reaching all types of learners in ways they learn best. Different media offer different modalities for presenting material: some materials may be understood better if they can be heard (e.g., a persuasive speech) or seen demonstrated (e.g., the steps involved in cardiopulmonary resuscitation). Information presented in two modalities at the same time can sometimes facilitate learning; e.g., beginning readers often benefit from hearing text read to them while they follow along with the text.

Audio and video technologies have long been used in classrooms to supplement print-based materials. The expanding capacities of new multimedia technologies offer opportunities for learners to access materials in many different forms—text, graphics, moving video, still video, digitized audio-and to combine these modes in unique ways. Thus, the new technologies offer ways of individualizing instruction to meet the needs of different types of learners.

The research on this topic is not extensive but it suggests that individuals do differ in their responsiveness to different media. Several studies have suggested that lower achieving students benefit more from the availability of audio and videotaped versions of courses. In one study, university students in the lowest quartile of achievement who received their psychology course via audiotape outperformed the live lecture students; in addition, fewer of the lower achieving tape students dropped the course.[63]

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61 Rockman, *op. cit.,* footnote *56.*

62 Jay P. Sivin and Ellen R. Bialo, Interactive Educational Systems Design, Inc., "Microcomputers and Related Learning Technologies: Overview," unpublished manuscript, n.d. See also Kathy A. Krendl and Debra A. Lieberman, "Computers and Learning: A Review of" Recent Research," *Journal of Educational Computing Research,* vol. *4, No. 4, 1988,* pp. 367-389.

63 See Johnston, op. cit., footnote *53.*

Some of the most pertinent evidence comes from the British Open University, which in the 1970s and 1980s created a large number of multimedia courses (i.e., these courses included components of printed text, television, radio, and audiotape). These were higher education courses designed to be completed primarily at home. Research on the use of the various media in these courses indicated strong individual differences between students in their ability to learn from different media.

> Whereas most students on most courses do seem to make an effort to watch the majority of television programmed, there is no coherent pattern for radio. Some students listen to none, Others listen to them all. Some listen to half. . . . Although radio may not be used a great deal by a lot of students, those students who do use it regularly find it extremely valuable. . . . The *weaker* students who do watch or listen rate the broadcasts as *more* helpful than do the more successful students. [a]

Having examined other possible explanations, the researchers concluded that some students have difficulty with text, as they have not been successful readers in their past academic experiences. These students are likely to rely on audio and video for a simplification of the material.

One group of researchers working with adult literacy learners developed an inventory to distinguish between auditory learners and visual learners. Results suggest that those learners who read at lower levels (junior high and below) have a strong preference for auditory-based instructional materials.[65] These researchers argue for the importance of including clear digital audio components in effective literacy courseware.

Providing Access to Information Tools

For many years, printed text was the primary medium through which people gained information. Schools and libraries provided access to books and other texts, and taught people how to use these resources to get needed information. Today a whole new information infrastructure is emerging; access to it depends on understanding and using a variety of technologies.

> As individuals, those of us already equipped with a computer and a modem on our desks do not represent the Americans who have the most to gain by greater access to information. We already have the means to find out most of what we want to know, electronically or through books, magazines, and, most importantly, through telephone calls to fellow members of the informed, Moreover, our basic needs (e.g., for health, education, and a job) are largely met.[66]

Just as the inability to read has often isolated people from the mainstream of society, technological 'illiteracy' threatens to marginalize those who lack technology access. Helping adults learn to use information tools promotes lifelong learning and independence. Everyone is entitled to know how to make effective use of the variety, quality, and quantity of information available as well as the powerful tools for creating and manipulating information (see box 3-H).

CONCLUSIONS

The findings of this chapter on adults and learning have several important implications for literacy policy planning. Contrary to stereotype, adults with low literacy skills are strong and resourceful, skilled and knowledgeable. Each brings a wealth of concepts, knowledge, and experience as a base for new learning. These

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[64] Anthony W. Bates, ' 'Adult Learning From Educational Television: The Open University Experience, " *Learning From Television: Psychological and Educational Research,* Michael J.A. Howe (cd.) (London, England: Academic Press, 1983), pp. 73-74.

[65] John A. Gretes, ''Using Interactive Videodisc for the Assessment of Adult Learning Styles, " paper present at the NATO Advanced Research Workshop "Item Banking: Interactive Testing and Self-Assessment," Liege, Belgium, Oct. 27-31, 1992.

[6₆]Francis D. Fisher, ' 'What the Coming Telecommunications Infrastructure Could Mean to Our Family," *The Aspen Institute Quarterly,* vol. 5, No. 1, winter 1993, p.121.

Box 3-H—Television as Everyday Teacher: The Importance of Media Literacy[1]

Television is everywhere. Over 98 percent of all households own at least one television set. After work and sleep, television viewing is reported to be the most frequent activity for adults. John Goodlad, in his book, *A Place Called School*, concludes that television has become the "common school" in contemporary society—more so than the public schools.[2]

Television has become the primary source of information for many Americans— particularly those for whom reading print is difficult. Less educated and poorer citizens spend more time viewing television than the better educated and more affluent.[3] OTA's case studies suggest that many immigrants value television as an important information source—a way to find out about American culture, to obtain news, and to improve their English skills. Many also use it as a means of encountering, albeit electronically, native speakers of English, a feat that most cannot accomplish otherwise. In the words of one immigrant: "I watch the news and soap operas. 'Young and Restless' is a favorite. There's a lot of stories. It helps me find out about American life."[4] After almost 50 years, television's impact on people's everyday understanding, as well as its capacity to educate, may still be seriously underestimated.

Television, like print in the past, is now our major medium of communication. Yet the idea that television has also created the need for a different literacy has not been widely recognized. After all, print literacy only became a desirable goal of society after the invention of the printing press. The problem may be that television is so pervasive and, in its broadcast form, so accessible and available to all with such little effort, that it seems everyone is fluent in its language. But just because most people have achieved a minimum level of proficiency does not mean that higher levels are not possible or necessary.

The distinction between information and entertainment on television has become increasingly blurred. "News is entertainment and entertainment is news . . . (Viewers) know as much about police stations and emergency wards from television drama as from information programming or their own experience."[5] The "language" of television is hard to recognize because the information received from watching TV looks and sounds real. But just because it presents moving images, natural sounds, and spoken language does not mean it is real life. Television is just as artificial and symbolic as the printed word. People can understand it, just as they can understand their native language without reading or writing it, but their relationship to it is likely to be passive not active.

Technology is now available to foster the mass proliferation of video "literacy." Small format camcorders and VCRs are to video literacy what the printing press was to written literacy. There could be a camcorder in every classroom. Children and adults could learn how to "read and write" fluently in the language of their time.

With this in mind, Charles Brover of York College in New York City asked some professional video producers to teach his adult literacy class about basic production. Then he challenged his students to create a video program of their own and they accepted enthusiastically. Not only did his students do a lot of writing and reading as they planned the production but ". . . there are some secondary advantages as well," says Brover. "They're thinking of television differently, they're paying more attention to what they see on television and are more critical about it. . . . I think that it's taken out some of the magic of it, but mainly I think it's made them agents of literacy and so it's very exciting for me."

[1] Adapted from Christine Holland and Jim St.Lawrence, "Does Video Instruction Have a Part to Play in Adult Literacy Program," unpublished manuscript, 1993.

[2] John I. Goodlad, A *Place CalledSchool: Prospects for the Future (New York, NY: McGraw-Hill, 1984).*

[3] Barbara A. Marchilonis and Herman Niebuhr, *Television Technologies in Combatting Illiteracy: A Monograph, ED* 253 772 (Washington, DC: National Institute of Education, 1985).

[4] Center for Literacy Studies, University of Tennessee, Knoxville, "Life at the Margins: Profiles of Adults With Low Literacy skins," OTA contractor report, March 1992, p. 138.

[5] Tamar Liebes, "Television, Parents and the Political Socialization of Children," *Teachers College Record,* vol. 94, No. 1, fall 1992, p. 74.

adults are not passive vessels into which learning should be poured, but active builders of their own skills and knowledge-participants in the educational process. These adults are capable of making choices, of mastering their own learning tools, and of becoming competent consumers of learning opportunities. The delivery of literacy services must consider these learners as potential consumers exercising choice over available options.

The great majority of adults needing literacy skills do not participate in educational programs for which they are eligible. The problem of nonparticipation--- what causes it and how factors such as culture and life history may affect it—-needs to be better understood. New models of **education, tools of** instruction, and methods for delivery need to be developed that will appeal to nonparticipants.

Adult learners participate in learning opportunities for a wide variety of reasons, which include, but are not limited to, employment and workforce participation. ''Adult literacy education must focus on meeting learners' goals, for as long as participation is voluntary society can reap its benefits only if learners are able to reap their own. ' '[67] Literacy policy and planning needs to recognize that learners have a broad range of learning goals and outcomes. Adult literacy education can be viewed as an investment in an educated citizenry. To paraphrase Thomas Jefferson, education should enable all citizens to exercise the rights of self-government and to pursue happiness and individual development within society. Literacy policy **and practice** can be developed to build on the goals and motivations of individuals learners.

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[67] Beder, op. cit., footnote 36, p. 161.