

The Challenges of Training and Retraining Mature Learners

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Abstract

By 2005, older workers are projected to comprise 20 percent of the workforce (Barber, Crouch, & Merker, 1992). AT&T, General Electric, McDonalds, Traveler's Insurance, and Days Inn are just a few of the many companies that have already implemented older worker training programs to better utilize this growing older workforce (Hale, 1990; McNaught, 1994). Moloney and Paul (1992) suggest that updating older workers' skills cost less than hiring new graduates. Inter-generational secondary classroom and other retraining facilities must begin to prepare for the expected workforce of the future. In addition, vocational special needs educators must be aware of the special needs of the older learner associated with the aging process. This article explores the aging process from physical, cognitive, social and psychological perspectives, accommodations for age related changes, retraining mature learners, adaptations of the classroom environment, training technology issues, and successful corporate retraining programs to better prepare vocational educators for the workforce of the new millennium.

The challenges of training older individuals with special needs are very similar to the challenges for training anyone with special needs. The term *special needs* encompasses a wide variety of personal circumstances and vocational environments. Unlike an identified special need, age is a gradient of change that cannot be identified by biology only. Age may be identified in a number of different ways including chronological, anatomical, physiological, pathological, and psychological stages (Hale, 1990). Hale further states that, "all aging persons cannot be lumped into the same category. One can be 'old' at forty in terms of being psychologically or emotionally dull or because of a pathological condition. On the other hand, a seventy-year-old could be considered 'young' in the sense of emotional openness, spontaneity, and receptivity to new ideas" (p. 12). The first section of this article explores the aging process of individuals. Vocational educators must have a general understanding of the aging process so they can better accommodate the needs of older individuals and utilize the advantages of maturing students in their vocational classrooms. While a single article cannot provide readers with a comprehensive guide to training older individuals, the second section of this article explores the challenges of training older adults.

The Aging Process

For many the word aging conjures images of infirmity, senility, physical impairment, and losses in various abilities. This term is not always viewed positively in American society. Aging, often characterized by

changes in physical, cognitive, social, and psychological systems, should not be perceived negatively. Instead, it should be viewed as a developmental stage marked by maturation and a redefinition of one's life-space based on personal and professional experiences and accomplishments.

Why does aging occur? The answer is unknown (Whitbourne, 1996). In an electronic article, Rogers (no date) suggests that aging may be attributed to intracellular changes that stem from any or all of the following:

- 1) chromosomal deviations; 2) accumulated metabolic or post-translational errors; 3) waste products; 4) nervous system changes which alter endocrinologic functions; or 5) approaching the end of a finite turnover of cells.

The aging process brings with it complex physiological and physical processes that do not occur at the same time or rate in any one individual. Many researchers have documented and described these processes (Birren & Schaie, 1996; Craik & Salthouse 1992; Whitbourne, 1996). Although the cause of aging is unknown, it is certainly possible that genetics, heredity, nutrition, life style, physical activity, general health, intellectual pursuits, attitude, level of engagement, and positive interactions with others can vary an individual's rate of aging (Birren & Schaie, 1996).

America is aging rapidly. The groups of senior adults growing at phenomenal rates are those 75-84 and those 85 and older. Predictions indicate that in the year 2000 about 5 million Americans will be over 85 (Graham, 1992). Those in the 85+ age

group will number about 24 million (Schneider, 1991).

Aging encompasses an individual's body and mind. The next sections explore the physical and internal, cognitive, social, and psychological effects of aging.

Physical & Internal Aging

Physical and internal changes occur. The most visible change occurs in appearance. Cosmetic variations outwardly label the aging process. According to Whitbourne (1996), changes take place in the skin, hair, body build, nails, eyes, teeth, and internal systems. Outward signs indicate that cellular and structural transitions have occurred. These transformations vary from individual to individual, and they actually begin during one's 20s or 30s.

The skin's appearance changes during the aging process. Older adults develop creases and experience discoloration, sagging, and wrinkling. The skin becomes less resilient and is more prone to damage. Additionally, it is less adaptive to heat and cold because of changes in sweat glands and subcutaneous fat levels. The skin tends to dry, and the epidermis experiences thinning.

The hair of an older adult gradually becomes thin. It becomes gray because of pigment loss. In some cases fine, sparse hair, or hair loss are a problem. Hair loss is attributed to either a destruction of follicles or deterioration in their growth patterns (Whitbourne, 1996).

Physically, aging adults experience changes in body mass, namely changes in height or weight. Both are strictly dependent on previously established nutritional patterns and activity levels. Some mature adults may experience a reduction in height due to lowered levels of bone mineral content or changes in the joints or arches (Whitbourne, 1996). Other se-

nior adults may either gain or lose weight during their later years.

In addition, the nails are altered. They become discolored (yellow or dull); they may thicken, change shape, and grow at slower rates.

The eyes and the teeth also experience challenges. Both undergo minimal to severe structural transformations as a result of aging. Vision may blur, visual acuity declines, and the ability to discriminate between certain colors becomes problematic. Depth perception difficulties can also cause difficulty recognizing or navigating through objects.

Bone loss alters the jaw line, and the structural appearance of the face changes. The teeth deteriorate, and they may become yellow and cracked. The gum line recedes, and tooth enamel becomes easily stained.

Internal changes occur within the body's internal regulatory systems. The central nervous, cardiovascular, respiratory, and digestive systems of the body each undergo declines in function and ability. Fewer neurons and a slower growth rate of information receptors or dendrites occurs in the central nervous system. The cardiovascular and respiratory systems become less efficient and less capable of sustaining intensive and prolonged aerobic activity. Changes in the large intestines and gastric secretions alter the digestive system.

The body's central processing system (brain) is not immune to variation. The brain decreases in size with aging (Birren & Schaie, 1996). It may also assume a different structure, and it may be marked by a loss of white matter which causes shrinkage. The weight of the brain may decrease, and a widening between the skull and cerebral cortex may appear.

Cognitive Transformations

Cognition involves thinking, remembering, learning or knowledge acquisition, and memory. Do mature adults experience changes in their cognitive abilities? Are these changes related to the aging process? During normal aging, cognitive processes are altered. Seniors do experience varying degrees of sensory decline, difficulty using encoding strategies, attention deficits, memory deficits, and decreases in information processing speed (Danowski & Sacks, 1980; Bruce & Herman, 1986; Czaja & Sharit, 1993; Whitbourne, 1996).

According to Whitbourne (1996), information processing abilities, reaction and response times, accuracy, and performance on laboratory tests are impacted by age. Maturing adults tend to require more time to recognize characters in constant positions. They also need more time to accurately evaluate and respond to demands requiring skill and judgment. Additionally, they perform slower and less accurately on some laboratory tests.

Schaie and Willis (1993) examined psychometric intelligence across ability in 1,626 individuals ages 29 to 88. Abilities examined included numeric, verbal memory, spatial, inductive reasoning, and perceptual speed. Substantial age-related differences were reported. Younger participants performed higher on inductive reasoning, spatial orientation, perceptual speed, and verbal memory tasks.

McDougall (1995) indicates that senior adults' cognitive complaints involve memory deficits and forgetfulness. He indicates that older adults have limited alternative memory strategies, and they use these less frequently than their younger counterparts.

Newman, Karip, and Faux (1995) conducted a study to determine the effects of an intergenerational program on memory. The researchers examined performance on memory tasks, perception of memory, and self-ratings in twenty-six mature adults age 60 or older. The participants regularly took part in an intergenerational school program. Results indicate that the program influenced the seniors' perceived and actual memory. The impact varied with age and educational level. The researchers contend that an intergenerational program can help senior adults maintain everyday memory functions.

Computer Performance and Cognition in Aging Adults. Czaja and Sharit (1993) analyzed the computer performance of sixty-five women on "real world" tasks. The women were 25 to 70 years of age. The "real world tasks" were file modification (updating database files), inventory management (decision making and information processing), and data entry (repetitive motions). The results indicate that increased age was associated with more keystroke and motor errors, greater difficulty completing tasks, and longer response times. The authors suggest that previous computer experience, pacing, interface design, and training are important considerations for successful computer performance by older adults.

Dyck and Smither (1996) conducted a study to examine the impact of cognitive abilities (spatial and reasoning), computer experience, gender, and computer attitude on the acquisition of word processing skills in senior adults. Twenty-eight participants with a mean age of 68.7 took cognitive tests measuring their spatial scanning, inductive, and deductive reasoning abilities. Individuals were tested during a six-week word

processing course. Results indicate that spatial scanning (as evidenced by rapidly locating important control keys) was a significant factor. Older adults with a higher spatial scanning score tended to perform better on keyboard tests. Additionally, deductive reasoning ability significantly influenced the older adults' acquisition of word processing skills.

Social Changes in the Aging Adult

Social contacts and networks are extremely important in healthy aging. Contact with others provides support, encouragement, and information that can positively contribute to older adults' quality of life. Family members and friends within this social context can prevent isolation, frustration, and the loneliness associated with growing older. Shared activities, dialogue with others, and volunteerism can help the mature adult accept, cope, and understand the normal aging process.

Bass and Caro (1995) indicate that elderly volunteers help make the Gerontology Institute at the University of Massachusetts more effective. The older workers help researchers focus on the most important concerns of an aging society. They also help the researchers extract interview data from their senior cohort groups, and they enhance the credibility of policy recommendations related to aging individuals. The senior participants gain positive experiences, acquire an in-depth knowledge of issues, develop informed opinions, become active research agents, and impact legislative proposals through their activism. As a result of this action-oriented model, mature adults become equal research partners rather than objects of

study. This paradigm shift has positive implications for gerontological research.

Senior adults need positive social interactions to cope with the anxiety, changing roles, perceptions, socioeconomic transitions, employment demands, and losses they may experience during the aging process. They must come to terms with their own mortality, and often, they experience the demise of their friends, spouse, parents, or siblings. Intergenerational learning programs can help mature adults remain active, contribute to their communities, share their experiences and wisdom, and cope with the above-mentioned issues.

Strom and Strom (1995) suggest that schools build and nurture partnerships with retired grandparents. This type of arrangement can meet the needs of schools and older community members by encouraging high student achievement, providing learning environments for grandparents or mature volunteers, and offering child-rearing support to parents. Teachers identify areas where they need assistance, and senior volunteers help them accomplish tasks in these areas. Examples of teacher requests include listening to children read, reviewing facts, practicing vocabulary, preparing for standardized tests, grading papers, recording class attendance, providing leadership and special activities, supervising play-time activities, and leading discussions.

Mature adults identify their interests, are screened, trained, scheduled, evaluated, and recognized for their efforts. They gain a sense of purpose and accomplishment, remain productive and active, feel useful, and indirectly improve their memory and retention skills as a result of the academic stimulation provided within the school setting

(Strom & Strom, 1995). Students involved receive positive interactions, positive role models of aging adults, and individual attention.

Greaves, Lewis, and Hammond (1995) describe a seniors' Advisory Committee that enhances the gerontology component of an undergraduate nursing program. The authors indicate that through senior input, they were able to develop new strategies and procedures to use the expertise of mature adults to enhance student learning. The faculty involved in the project changed the content of the nursing curriculum based on advice from seniors. As a result, the curriculum is more relevant, more pertinent, and more focused on senior issues.

Psychological Changes

The behaviors, attitudes, and self-image of aging adults may change over time. Instead of feeling strong, efficient, and valued, aging adults may have opposite feelings depending on their ability to perform daily functions and successfully maneuver within their environment. Senior citizens have concerns about their ability to remain viable and function in society. These concerns can be lessened through education, and assistive/adaptive technologies (Lawhon & Ennis 1995).

In a society that values youth and equates youth with attractiveness, aging individuals may feel isolated or unwanted. They may even feel rejected, worthless, or undesirable. To prevent these negative perceptions, maturing adults should reaffirm their worth and value, help others understand aging, become more educated, develop new pursuits, and remain involved in society. They must also help their younger counterparts realize that age-related stereotypes are a myth.

Accommodating Age-Related Changes

Aging individuals can compensate for changes in physical appearance (skin, hair, nails, eyes, teeth, and body build). They can also compensate for psychological, cognitive, and social transformations. Education, good health practices (controlling weight, diet, and exercise), regular medical and dental care, physical, and intellectual involvement are helpful ways to counteract age-related deficits.

In terms of physical appearance, the skin can age more slowly with the aid of sunscreens, avoiding direct sunlight, and education on premature aging. Wigs and hairpieces can reduce the appearance of hair loss and slower hair growth. The physical changes exhibited by the nails, eyes, and teeth can be lessened through a healthy diet, good hygiene, regular optometry and dental visits. Changes in body build can be controlled and lessened by regular exercise, physical activity, and a nonsedentary life-style.

Cognitive changes associated with aging can be lessened through intellectual challenges. Education on memory building techniques, sensory processing, and information processing speed can also prove beneficial. Social and psychological transformations can be lessened by positive and frequent interactions, positive self-esteem, and networking opportunities.

Retraining

As baby boomers cross the 45-year line, some join a silent but growing minority of underemployed or unemployed older workers seeking affordable training and decent jobs. With their increasing numbers, older boomers can become a potent force for better and less costly

training and job-finding services designed to meet their needs and develop their potential (Brudney, 1998).

Organizations across this nation, and across the world, are becoming more aware of our aging world population, and therefore, workforce. By 2005, people ages 55 and over are projected to be nearly 20 percent of the working groups (Barber, Crouch, & Merker, 1992). Companies such as General Electric, AT&T, McDonald's, General Motors (Hale, 1990), B & Q, a chain of English do-it-yourself stores, Travelers Insurance Company, and Days Inns (McNaught, 1994) are few of the companies that have implemented older worker training programs. In a study of the characteristics of 25 organizations, Paul (1983) found that organizations with innovative older worker programs were typically employee oriented, managers had a realistic perspectives of aging, and companies were not unionized.

Managers describe the older worker as having had more experience, better judgement, a stronger commitment to quality, more reliable attendance and punctuality and lower turnover (American Association of Retired Persons, 1995). In addition, Humple and Lyons (cited in Hale, 1990) further identify factors that are "particularly characteristic" of older workers:

- stronger sense of loyalty and commitment;
- more emphasis on quality of work life than on work itself;
- economic motives that may decrease to the point where earnings from work are seen as part of daily life rather than its focal point;
- more emphasis on social and personal concerns such as being friends or feeling appreciated or recognized;

- greater pride in craftsmanship or in quality of work;
- a greater attempt to work harder to make up for self-perceived failures or inadequacies; and
- a deeper sense of work ethic of give one's employer a good day's work and believing that work is intrinsically valuable (p.9).

The characteristics of an older worker are difficult to summarize and classify as "older worker characteristics." As they age, people generally become more heterogeneous rather than homogeneous, thus making classification of older individuals more difficult than it might be with younger individuals. Many characteristics described by Humple and Lyons may be observed in people of any age.

The Classroom Environment

The typical training classroom (educational or industrial) is very poorly constructed for an individual with special needs. Typically, the easiest special needs to identify are physical (sight, mobility, hearing, etc.). For individuals of any age, special learning needs are difficult for instructors to identify unless the person "self-reports" difficulties, or the person is diagnosed with a special learning need. The difficulty in accommodating older individuals with special needs is the low rate of self-identification. Approximately 2-15 percent of the adult population is coping with a hidden disability in the workplace (Lean, 1983).

Though "labeling" in secondary schools is sometimes misused, high school graduates lose their label. Therefore, they must "self-report" their special needs,

or be re-diagnosed by the postsecondary school or organization before additional help can be provided. This loss of a label may become destructive to individuals who are too shy or embarrassed to mention their special learning needs to their postsecondary advisor, ADA office, co-workers, or supervisors.

Reasonable accommodation for individuals with special needs can be provided by the instructor with minimal expense (Allen & Walker, 1996). First, the physical environment must be conducive to learning for *all individuals*. Instructors must assess their teaching environment and proactively make their classroom favorable to learning for all students. For older individuals with physical special needs, an instructor may: 1) add a microphone connected to speakers at both the front and back of the classroom; 2) install dual tracking that includes bright lights for classroom activities and dimmed lights for lectures; 3) install TV video monitors mounted at the front, middle and back of classroom, that can be equipped to the overhead projector system, the instructor's computers, or the classroom VCR; 4) widen the classroom aisles and seating to accommodate wheelchairs and other physical-assistance equipment. Many other changes can be made to the physical learning environment, with minimal expense, but the above accommodations will assist most learners. These minimal changes will transform even the typical training classroom (instructor-centered with poor acoustics and lighting) into a classroom that is more conducive for both younger and older learners.

For older individuals with learning disabilities, the accommodations are as diverse as the disabilities, yet a majority of the

accommodations are accomplished through changes in instructional methodologies, rather than in the structure of the classroom. An instructor may: 1) provide the learner extra time in the accomplishment of task; 2) utilize multiple teaching styles to better provide instruction to individuals with "non-reported" disabilities; 3) utilize multiple teaching mediums such as overheads, video tapes, flip charts, computer-assisted-instruction, etc.; 4) provide time for extra individual instruction; 5) create individual development plans; or 6) provide a team-oriented learning environment.

Although vocational special needs educators will find that the majority of these recommendations are simple, and common, industrial organizations and retraining centers may not. These entities are encountering some of the same challenges in training and retraining older individuals that educators have faced with secondary special needs students. Vocational special needs educators are in the unique position to begin demonstrating new ways to utilize lessons learned from younger individuals with special needs to the growing older work force of the next millennium. These strategies can then be shared with employers as well as retraining centers.

Retraining Older Workers: Technology Issues

Although physical, cognitive, social, and psychological transitions occur during aging, these challenges do not keep senior citizens from using technologies in the workplace. Employment is important and beneficial to seniors. Many older adults use technology at work despite negative stereotypes that assume older workers exhibit technophobia, cannot learn new

skills quickly, are less competitive, or even incompetent (Moloney & Paul, 1992).

According to Moloney and Paul (1992), older workers have lower turnover rates and perform as well as younger workers in the absence of stress. These authors also indicate that updating the skill set of older workers costs less than hiring new college graduates. Ogozalek (1991) indicates that seniors are capable of working successfully in high-tech environments. Initially, they may perform computerized tasks more slowly, but with practice, they use and operate computers equally as well as others. Senior adults should be retrained and kept in the workforce to combat employee shortages and boost their economic status. Jay (1991) indicates that direct computer use by older adults results in positive attitudes and a desire to enhance their computer knowledge, skill, and expertise.

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As mature adults learn computer software and hardware, their training paradigm should differ from models used to train their younger counterparts. As described by a number of authors (Danowski & Sacks, 1980; Elias, Elias, Robbins, & Gage 1987; Zandri & Charness, 1989), successful efforts to train and retrain older adults to work with computers use:

- self-paced learning;
- more time on task;
- handouts and study materials;
- extensive opportunities to practice;
- small group training;
- concise instructions;

- meaningful activities and explanations;
- touch sensitive and voice interactive systems;
- larger size displays and text;
- paired training for reinforcement;
- a patient, knowledgeable instructor familiar with the educational needs of seniors and available to answer questions; and
- "jargon" or terminology sheets.

These recommendations can help seniors learn to use computerized tools and software effectively. Morris (1994) found that older adults need positive initial computer experiences and structured content, error correction capabilities, and a gradual increase in content to successfully use spreadsheets, notepads, electronic calendars, appointment functions, and phone dialers.

Mature adults can successfully use computers to boost their productivity, entertain themselves, maintain social contacts, self-educate, and enhance daily functions (Lawhon & Ennis, 1996). Seniors can perform word processing tasks, use financial analysis software, play computerized games, and network through e-mail. E-mail is also a good way for seniors to maintain social contacts, find useful information, and connect with others. Accessing the Internet is another excellent way senior adults can reference databases, use other computer systems, participate in "live" discussions, and download programs for entertainment and educational purposes.

Technology and Seniors with Special Needs

Senior adults who are ill or disabled can use technology to maintain their independence

and perform tasks that would be impossible otherwise. Examples include text-to-speech software, on-line shopping services, health-related web sites, head controlled keyboard and mouse, and voice recognition software. These systems can help visually impaired seniors expand their knowledge base and simultaneously maintain their independence (Hendricks, 1991).

Shopping services provided on-line can help seniors obtain needed goods and services, such as household products, prescriptions, and groceries. These can be delivered directly to the senior's home. This type of service can be invaluable to individuals who are homebound or unable to operate a vehicle (Horowitz, 1995).

Internet web sites that provide information on illnesses, diseases, and prescription side effects can enable seniors to make decisions about their health care. Information on treatments, illness prevention and management can inform seniors and empower them to become partners with their physicians and make informed health care choices.

Headsets and head controlled keyboards and mouse devices free the hands and permit typing through head movements. These devices can be invaluable to those who lack muscle strength and coordination, or are unable to use their hands due to a stroke, accident, or injury (Apple Computer's Worldwide Disability Solution Group, 1994).

Lastly, voice recognition systems permit seniors to enter commands or text without direct keyboard interaction. Some of these systems are speaker dependent and require hours of "training" or voice and language pattern analysis. The user never touches the keyboard. Some systems provide continuous speech capabilities (Cook, Collins,

Flynn, Guttman, Cohen, & Budiansky, 1994).

Technology solutions can help seniors remain productive, active, and vital. Seniors are capable of learning and using technology to succeed in employment and educational arenas. Furlong (1995) indicates that seniors are just as capable as younger learners when acquiring computer skills. She insists that computer use can compensate for age-related physical differences in older adults. Older adults should be encouraged to investigate, acquire, and use computerized tools to enhance daily functions, compete in employment, increase knowledge, expand social contacts, and combat negative age-related stereotypes.

Successful Corporate Examples

Many companies are now providing successful older worker training programs. As stated earlier in the article, General Electric, AT&T, McDonald's, General Motors (Hale, 1990), B & Q, Travelers Insurance Company, and Days Inns (McNaught, 1994) are just a few of these companies. By using retirees to provide assistance for the company hotline, instead of temporary agency employees, Travelers Insurance Company saved over one million dollars in the first year of their new program's operation (McNaught, 1994). B & Q, a chain of English do-it-yourself stores, opened new store staffed only with older workers. This store experienced better work force stability compared to comparable stores. They had six times less employee turnover, 40 percent less absenteeism, improved customer relations, and an increase in profits (McNaught, 1994). Paul and Townsend (cited in Allen & Hart, 1998) state that Combustion Engineering, for

example, is bringing back many workers who went into early retirement. McDonalds initiated the McMasters program to recruit and employ older workers. Texas Refinery Corporation has recruited nationally for older sales personnel for the past 20 years. Sixty percent of its sales force are age 55 or older, 50 percent are in their 80s, and several are past 90. At Days Inn (Knoxville and Atlanta) more than 30 percent of the reservationists are older workers. Days Inn, after adjusting its training methods on their high-tech reservation system for older workers, demonstrated that the cost and time for training older workers is now the same as that for younger workers (McNaught & Barth, 1992).

Each of these corporations has utilized the unique abilities and experience of an older workforce. Vocational educators in the school district and in other organizational settings can utilize these successful examples to further investigate and create learning models that are adaptable for both younger and older learners.

Conclusions

Projections from the Bureau of Labor Statistics identify three groups that will contribute the majority of the new entrants into the workforce by the year 2000: women, minorities, and older adults (Doucette & Venture-Merkel, 1991, p. 19). Couper & Pratt (1997) state that the proportion of those under 18, new workforce entrants, is expected to stay constant at around 24 percent between the years 2000 and 2025.

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Educators and trainers can conclude from these figures that the workforce is changing and growing older. In the next 25 years, educators and trainers will teach in diverse classrooms that will have a larger portion of older learners. For vocational special needs educators, these figures forecast a greater number of individuals who will require special accommodations due to physical, cognitive, and social changes that accompany our one common special need: age.

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