

# A Knowledge Transfer Process: Establishing Training in New Technology for an Ageing Workforce

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**Abstract.** Learning new technology can transform the lives of older workers. Worldwide older workers remain in the workplace longer and continue to work for various personal and economic reasons. Some leave one workplace and take up a second or even a third career. The new technology training required for many industries is generally focused on younger workers already trained in new technology basics. Ideally, to keep a diverse workforce motivated and productive, training for younger and older workers is necessary. New technology training for older workers is designed differently than that of younger workers to address some of the physical and cognitive changes that occur with age. If older workers are given the appropriate training and help, there is evidence to show they are able to master the new technology.

**Keywords:** ageing, workforce, new technology, training.

## 1 Introduction

The workforce is aging and there are tremendous changes taking place in work environments and organizational structures. The introduction of new technology into working life has dramatically changed the nature of many jobs and work situations for many workers. Charness and Czaja [1] state that, “The continued reliance on computer-based technologies in the workplace increases the demand for knowledge, and skilled workers. To adapt to the changing workplace, all workers—including older workers—need to participate in worker training programs. This is particularly true for older adults who are less likely to have the technology skills needed in today’s workplace”.

Worldwide older workers continue to work beyond retirement age for various personal and economic reasons. Older workers remain in the workplace longer for various reasons. Some leave one workplace and take up a second or even a third career. Many older adults want to continue working because they're healthy. People are living longer and remain actively productive in some form. Some start a new job, maybe work part-time in a flexible work arrangement while others have to stay in the workforce because of need for healthcare benefits or economic reasons [2]. For many

older workers an ideal job is having the opportunity to work part-time on a flexible schedule, and the ability to obtain job training. AARP [3] found older workers need a flexible work schedule and have different needs and expectations with regard to work and giving back to the community.

## **2 New Technology Training for Older Workers**

According to Charness and Czaja [1], today's global economy requires a trained and flexible workforce able to adapt quickly to new technology, changing methods of production, and evolving consumer demands. Not all employers, however, are convinced that older workers have what it takes to meet their needs in this new economy. In particular, they have reservations about older workers' technological competence and ability to learn new technology. The training required for many industries is generally focused on the idea that younger workers are already trained in new technology.

Ideally, to keep a diverse workforce motivated and productive, training for younger and older workers is necessary. New technology training for older workers is designed differently than that of younger workers to address some of the physical and cognitive changes that occur with age. Hence, ageing workers are significantly less likely to believe that they have career prospects when compared to prime age workers, and particularly so if they are undereducated, but there are no significant differences about fear of job loss [4].

## **3 Factors That Affect Older Workers**

### **3.1 Stereotypes and Myths**

Older workers don't fit one unique profile and differ from one another as much as anyone from any other age group in abilities, desires, and needs [5]. However, that being said negative stereotyping is often used against older workers and can have a serious effect on those who are being stereotyped as well as the rest of those that are not [6]. One of the most pervasive stereotypes of older workers is that they cannot learn "new tricks". The most frequently cited negative characteristic regarding older workers is related to difficulties in adjusting to change and technology [7]. Negative myths and stereotypes about older workers do exist and do impact on the workforce participation of such workers. Additionally, older workers may also hold similar ideas about their own abilities and believe the negative stereotypes.

### **3.2 Chronological Age and Lack of Confidence**

Older workers indicate that they faced age discrimination in the workplace and that their age was a major impediment to continued employment. This result coincides with a recent report published by AARP [3] indicating that age discrimination is a serious concern and the single largest barrier confronted by people 50 years and older

who wish to remain employed. Chronological age is a poor predictor of technical learning capacity; rather, the main factors affecting how older workers respond to technology and learning new skills are a combination of self-efficacy, self-belief and self-confidence, the perceived benefit in terms of time left in workforce, and the training approaches used [2]. Another challenge for older workers is lack of confidence. Many older people encountering new technology for the first time believe that it is far too difficult for them to make sense of it all at their age. This belief is reinforced by the attitude of many younger people. Czaja et al. [8] suggest that older adults' relationship with technology is much more complex than would be suggested by the stereotype of older adults simply being afraid and unwilling to use technology.

### **3.3 Psychology and Motivation**

Two more factors that are often overlooked when discussing older workers are psychology and motivation. Experience Works [6] suggests that older people heavily weigh the benefits of whether or not to adopt new technology. Czaja et al. [8] found additional personal barriers to technology adoption: low self-efficacy regarding computer use and high anxiety for computer use.

### **3.4 Qualities Desired by Employers**

Many businesses persist in believing stereotypes and myths about older workers and may discriminate against them even though the reputation of older workers is shown to be of high quality. Older workers exhibit many characteristics and attributes desired by employers and businesses [7]. Despite the stereotypes, employers affirm that, in general, older workers:

- have low turnover rates
- are flexible and open to change
- possess up-to-date skills
- are interested in learning new tasks
- do not experience transportation problems
- are willing to take on challenging tasks
- have low absentee rates
- have few on-the-job accidents

Another study, conducted by the Society for Human Resource Management (SHRM) in conjunction with the American Association of Retired Persons (AARP), confirmed the majority of these findings, and added several more [9]. Of the nearly 400 human resource professionals surveyed,

- 77% agreed that older workers have a higher level of commitment to the organization than younger workers (only 5% disagreed)
- 68% concluded training older workers costs less or the same as training their younger counterparts (6% disagreed)

- 57% reported that age does not affect the amount of time required to train an employee (14% disagreed)
- 49% determined that older workers grasped new concepts as well as younger workers (18% disagreed)

However, the one area of concern expressed was how well older workers adapt to new technology. According to SHRM [9], “Sixty-six percent of the respondents agreed that older workers tend to be more fearful of technology than younger workers”. On the other hand, other studies by Hall and Mirvis [10] report that older workers *are* trainable in “high technology skills” and are “comfortable” learning them. Hall and Mirvis [10] also found that with proper training, older workers are undaunted by technology eager to update their skills.

### **3.5 Lack of New Technology Skills**

Other important obstacles reported by older workers with respect to finding a job include the lack of skills to compete in today’s workforce and a tight job market. Older workers indicate that they have insufficient technology skills and need training for the new technology. These findings have implications with respect to training and imply that managers need training about aging to understand the value of the older worker to the organization. Older people are willing and able to learn new technology and use computers in various contexts but they consistently have more difficulty than younger users [11]. Additionally, older people need access to technology training programs that are designed to consider the learning limitations and preferred formats of older adults. Not all computer users are created equal, a fact that computer designers and software engineers have not always recognized. However, if older workers are given the appropriate help, there is evidence to show they are able to master the technology. On a positive note, older workers are generally enthusiastic about learning computer-based technologies and computer skills and are excited about returning to work. Managers that engage older workers and provide them with adequate job training and opportunities add an additional vital resource to their workforce.

## **4 New Technology Training for Older Workers**

### **4.1 Older Worker Learning Preferences and Extra Time**

In terms of learning preferences, older workers prefer active learning in group formats where there are opportunities to learn and share experiences with others. They also stress the importance of engaging in hands-on learning activities [12]. Additionally, participants indicated that access to feedback is important. This confirms results from a study by Sharit et al. [13]. There is a need for more feedback regarding the correctness of their responses. These results have implications for the design of training programs. According to Charness and Czaja [1] trainers should keep demands on working memory to a minimum, and where possible, capitalize on the learner’s

pre-existing knowledge base. If the task is complex, training demands can be reduced by using part-task training techniques such as providing practice on task components, and proceeding from simple to more complex aspects of the task.

Additionally, it is important to allow extra time for training an older adult (1.5 to 2 times the training time expected for a young adult), to ensure that help is available and easy to access (e.g., acquaint the person with sources of help), and to ensure that the training environment allows the individual to focus on the training materials [1].

## **4.2 Other Design Factors**

The reading level of all instructions and manuals matches the abilities of the user and use simple support materials such as graphic aids or reminders of procedural steps minimizes the demands on working memory. It is important to match the instructional technique and the medium (e.g., text, voice, animation) to the type of material that is being presented. For example, “how to” information should be presented in a procedural step-by-step format and spatial tasks should be taught using a visual medium [1].

Charness and Czaja [1] also suggests allowing the learner to make errors, when safe, but provide immediate feedback regarding how to correct mistakes. The older adult should be actively involved in the learning process, and an engaging environment that captures the attention of the learner should be created.

Due to the rapid development of powerful technology tools multimedia programs are increasingly being used for education and training. Despite the significant use of multimedia in training, there has been very limited effort to evaluate the design of multimedia programs or the impact of this type of training format on user performance [14].

## **4.3 Strategies**

It is important to develop strategies to encourage older workers to participate in training and retraining programs. Employers need to ensure that older adults are provided with access to training programs and incentives to invest in learning new skills. In general, people are more receptive to engaging in learning activities if they see a long-term benefit from the experience [8]. Additionally, consideration should be given to the scheduling and location of training programs.

To encourage the uptake of training opportunities, delivery methods need to be appropriate, such as self-paced and on-the-job formats that are relevant to the job, the job being undertaken, and teaching that relates to worker’s previous experience [1].

## **5 Conclusion**

Older people can learn to use new technology, given sensitive and effective teaching and support. New developments in this technology offer the possibility of considerably enhancing the lives of older people, in terms of productivity,

communication, and support. In realizing these possibilities, attention paid to developing technology specifically for older people will not only bring social and economic dividends in itself, but will help in the design of technology which is more accessible for all of us.

Hence, to increase older adults' technology two approaches can be taken: 1) improve education about benefits for technologies that have not yet been adopted and 2) address computer self-efficacy and computer anxiety [11].

Currently there is little empirical knowledge to guide the developer of these applications. In addition, according to Charness, Fox and Mitchum [15] almost no research has been done with older adults. This issue is especially compelling given that multimedia formats place demands on cognitive processes that show age-related decline such as working memory and selective attention.

In conclusion, technology acceptance and adoption has implications for older adults and society as a whole. Therefore, as the aging population grows and technologies continue to develop it is imperative that we understand how to design technologies that support the needs and preferences of older adults [1]. The potential for new technology to transform the lives of older people in the workforce is ongoing and provides an opportunity for a rich and diverse workforce.

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