Listening to Older Adult Learners: The Experience of Using Assistive Technology in Task Performance and Home Modification

by

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Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Doctor of Education

in

Adult and Continuing Education

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May 1995

Blacksburg, Virginia
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(ABSTRACT)

Limited research exists that explores the needs of the burgeoning, well elderly sector of our population. Using a phenomenological approach, this inquiry investigated the lived world of six older women, between the ages of 65–85 years, struggling to continue living alone. Research was conducted in response to the question: What is the experience for older women of learning to use assistive technology for task performance and home modification, and what is the meaning of that experience? Data collection followed the four step, descriptive phenomenological model of Barritt, Beekman, Bleeker and Mulderji (1983). Taped interviews held with the six co-researchers led to the development of individual descriptions and to co-researcher validation of the written descriptions. Extended reflection on the confirmed protocols allowed the development and final confirmation of the older womens' experiences of learning to use technology at home.

Research findings delved into the complex meanings of daily experiences of six older women learning to use assistive technology in order to better manage chronic disease. This learning experience was described in the context of self-care needs, such as the impact of declining health status, and self-care practices, such as increased
motivation for learning to use assistive technology. Co-researchers' reluctance to accept extended family help with self-care/home maintenance tasks facilitated their use of learning as a strategy to enhance declining task performance abilities needed to live alone. Learning outcomes strengthened autonomy and encouraged pursuit of familiar social roles.

The study delved into the inner experiences of older women living alone and learning to use assistive technology. Findings suggested that future research needs to explore the significance of role participation among men and women in late life. Study findings suggested that access to assistive technology products was seriously limited, that product design was inappropriate and that written direction for products was frequently unclear. Implications for practice indicates the need for health educators to find ways to increase access to ATD education and to move beyond existing barriers that limit diffusion of learning about assistive technology products in task performance and home modification.
Acknowledgements

I acknowledge and express sincere appreciation to the members of my committee for their continued support. I especially want to thank Dr. Marcie Boucouvalas, chairperson of my committee and academic advisor, who offered assistance and instruction throughout my program which was encouraging, useful and highly valued. I want to thank Dr. Marianne Maynard for her contribution as committee researcher. It was through her guidance that I recognized the global importance of the topic of increased access to older adult education about assistive technology. I also want to thank Dr. Harold Stubblefield, Dr. Ron McKeen, and Dr. Jim McAuley for their feedback and direction.

I owe my deepest debt of gratitude to the six co-researchers who contributed to this qualitative study by sharing their thoughts, time, and lifetime love of learning during this comprehensive qualitative research process. It was rewarding to learn that each hoped that this research might direct attention toward the importance of increased access to education for older women about assistive technology in task performance and home modification.

My family and friends assisted by offering encouragement over an extended time period. They willingly performed routine tasks such as taking messages, coordinating computer programming and reading the text as revisions were completed. My colleagues provided support on an especially rewarding "real world" journey.
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CHAPTER I
INTRODUCTION

Background of the Problem

The aging of America is a well-recognized trend. Dramatic reversals in the demographic profile are illustrated with the diminishing size of the younger population in contrast to the escalating aging population. The age composition of those within the growing numbers of persons 65 years or older has intensified the need for education to prepare aging persons for the opportunity of living longer. The implications of this "greying of America" for the field of adult education, and in particular the area of community adult health education, are dramatic and far-reaching. Increased demand for adult health educators to work with the impaired, older adult group will continue well into the 21st century with the arrival of the "senior boomers." Until about 2010, the aged will become increasingly older with the frail elderly, the 75 years or older age group, increasing most rapidly. For example, local Maryland statistics, compiled by the Southern Regional Education Board, show a projected growth of 35% for those age 65 years or older between the period of 1980–2010; for females, 65 years or older, a growth of 75%; and for black populations, 65 years or older, a growth of 169% (Denton, 1990).

Community health education objectives, outlined for the next decade in Healthy People, 2000 (1990), were developed at the Federal level from 1984–1990 by a 300 member consortium of public health, rehabilitation, and health and human services
providers. That document is expected to serve as a national health education framework, and emphasizes the need for increased adult health education efforts. In 1991 the critical needs of local community health educators were identified through a series of public hearings and recorded in the manual, Healthy People, 2000: Citizens Chart the Course (1991). The increasing needs of older adults drew considerable attention in the areas of health promotion, health protection, and preventive care service delivery. In the later category, high priority was given to the task of increasing the availability of and access to preventive education programs for frail and ethnic minority elders, in the area of preventive self-care strategies, to facilitate more successful aging.

These guidelines drew heavily from information gathered in the 1984 National Health Interview Survey. For example, data showed that the most frequently experienced chronic conditions, from those conditions that were identified, included: (a) arthritis, (b) hypertension, (c) hearing and vision problems, (d) heart disease, (e) incontinence of bowel and bladder, (f) diabetes, and (g) osteoporosis. Almost 50% of all working age people, 45 years or older, have one or more chronic conditions. Many within this age group fill dual roles as workers and as caregivers for aging relatives or friends. About 80% of the elderly (65 years or older) have a chronic condition (Ficke, 1992).

Chronic health conditions are generally associated with the existence of long-term disability. The Nagi (1969, 1991) framework of disability, or functional limitation framework, served as a conceptual anchor for the design and implementation of this phenomenological inquiry. Proponents of Nagi's framework indicate its particular utility
arises because it does not focus on the consequences of disease but instead fosters consideration of methods for the prevention of secondary disabilities. The framework includes the concepts of pathology, impairment, functional limitation, and disability.

Nagi (1969, 1991) defines pathology as interruption of normal body processes or structures (i.e., injury leading to nerve loss in arm muscles or joint range limits as a result of osteo-arthritis). Impairment is defined as the loss and or abnormality of mental, emotional or physiological functions (i.e., muscle tissue loss or irregularity of joint articulation surfaces). Functional limitation is defined as the restriction of ability to perform an activity (i.e., cannot pull or reach with arm to trim a garden hedge). Disability is defined as an inability in performing expected roles within one's social or physical environment (i.e., a landscape gardener or retiree with a gardening hobby can't do yardwork). Although the definition includes four distinct stages, each factor is closely related. For example, the older adult experiencing pathology may find that impairment results can lead to specific functional limitations in task performance. However, it is important to note that older adults even while experiencing functional limitation (i.e., inability to trim the garden hedge) may not perceive or describe themselves to be disabled. Rather one might hear an older adult comment, "I guess I'm just getting old."

Framing disability in this manner describes the interactive effect of biological, physical, social environment, lifestyle and behavioral risk factors. Typically, an older adult tends to perceive and accept a functional limitation as part of the normal aging process and makes little or no effort to identify or attempt solutions for reducing deficits.
in task performance. All too often this leads to increased frailty (i.e., functional limits in performance of tasks needed to live alone), premature disability, and subsequent housing relocation or even institutionalization.

According to the Americans With Disabilities Act of 1990 (Public Law 101-336), disability is broadly defined in the law as any serious limitation in one major activity of daily living (ADL) (i.e., eating, bathing, toileting, dressing or walking). Routine geriatric rehabilitative interventions for older adults with chronic health conditions and activity limitations regularly include introduction to assistive technology services and devices (Haworth, 1983; Rogers, 1983).

According to the Technology-Related Assistance for Individuals With Disabilities Act of 1988 (Public Law 100-147), assistive technology (AT) is defined as any item, piece of equipment, or product system, whether purchased off-the-shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with impairments or disabilities. Assistive technology devices (ATDs) can range from simple low tech items such as eyeglasses, hearing aids, walkers, tub or shower grab bars, to far more complex and costly high tech, computerized systems, such as bar coding used on food labels to convey cooking directions that can be read before placing in a microwave oven to ensure proper temperature and time are used (Abrams & Abrams, 1991; Brever, 1982; Chamberlain, Thornley, & Wright, 1981; Enders & Hall, 1991; Hunt & Barbieri, 1990; LaBuda, 1988; Mann & Lane, 1991).
**Functional Limitations Increase With Age**

The likelihood of having difficulty carrying out basic life activities more than doubles with each succeeding older adult age group. For example, among those 65–74 years of age, one in nine adults have difficulty; this increases to one in four people for those 75–84 years of age; and among those adults 85 years or older, almost 3/5 (57%) experiences difficulty (Ficke, 1992). Seventeen activity limitations were identified in an analysis of 1987 data from the National Medical Expenditure Survey (NMES), and projection estimates of the total number experiencing limitations were made (LaPlante, 1991). The nine activity limitations cited most frequently for both males and females, age 70 to 84 years or older, were (a) limitation of sight, (b) limitation of speech, (c) susceptibility to fainting and/or dizziness, (d) limitation of stamina, (e) limitation of head movement, (f) difficulty in lifting and reaching with arms, (g) difficulty in handling and fingering, (h) difficulty in sitting and using lower extremities, and (i) poor balance (Ficke, 1992).

Improving the fit between older adults experiencing functional limitations and independence–enhancing home settings reduced their functional limitations. In the literature reporting on chronically disabled older adult groups, positive outcomes such as reduction of functional limitations, have been reported (Mann, 1992; Rogers & Holm, 1992). A review of Zedlewski's (1990) demographic projections offer a meager hint of optimism. Zedlewski's projections begin with a baseline statistic from 1990 that indicates that 6.2 million older adults have ADL limitations. Although she projects that an increasing number of older adults, 65 years or older, will experience ADL limitations
(i.e., 9.9 million in 2010 and 16.3 million in 2030), she offers data showing what might occur if the disability rate increase could be channeled along an optimistic path (i.e., introducing preventive health education strategies at the community level). The introduction of these strategies could reduce the number of adults experiencing the onset of disability to 8.8 million (in 2010) and 13.4 million (in 2030). Phenomenological inquiry was used in this study to increase the understanding of what the experience of learning to use assistive technology at home is like and the meaning of that experience. It is hoped that such understanding will add support to the achievement of a more optimistic future outcome (i.e., reducing the percentage of growth in numbers of older adults with ADL limitations or the number of older adults who might become disabled).

Statistical data clearly described the extent to which performance problems dominate the daily world of the older adult and eventually determine the need for housing relocation and/or institutionalization (Liu & Cornelius, 1988). In 1984, 4.9 million elderly persons experienced limitations in one or more ADLs; 2.5 million had limitations in four or more ADLs; and, 7 million needed some form of assistance with ADLs. Data from the 1984–85 National Long Term Care Survey reflected the stark impact of the effects of age on the probability of having an ADL limitation. Among those adults, 65–69 years, 12.6% needed help and at 85 years, 55.3% required assistance. Research evidence supported the conclusion that the successes of modern medicine are allowing an increased life longevity for those adults who are chronically impaired. Some have described the escalating numbers of functionally limited older adults as the failures of successes (Zedlewski, 1990).
Impairment Increases Injury Risk

Age or disease-related limitations of older adults’ physical, sensory, and cognitive functioning transform the appliances and fixtures of their homes into hostile environments designed to accommodate younger, more physically able people (Christenson, 1990; Hiatt, 1992; Oriol, Lidoff, & Murphy, 1992). Generally, the demands of the environment have become incongruous with the older adult’s impaired abilities. The homes where older adults prefer to remain are often older homes that are more difficult to maintain. Steinfeld, Schroeder, Duncan, Faste, Bishop, Wirth, and Cartell (1979) reviewed the literature in the field of architecture and human factors for the development of their ENABLER model. The usefulness of the model lies in clarifying the connection between an individual's functional limitations and the individual’s access within the built environment and/or task performance environment. For example, if an older adult experiences arthritis in the shoulders, hips, and knees, movements such as bending and reaching would be restricted. The functional limitations created would include (a) donning and doffing articles of clothing, (b) ease of accessing to low and/or high cabinet storage areas and/or work surfaces throughout the house, (c) rising from a sitting to standing position, (d) entering and exiting a bathtub, and (e) ascending or descending stairs.

Considering the potential for preventing injury, one could imagine positive effects if the home environment was modified so that it would match the older adults' physical changes. Data from Moos' seminal research (1974) on environments in congregate senior housing and nursing home settings described (a) marked influences in
the residents' behavior from physical, social, and organizational environments, (b) the variability determined by older adults' personal capacities, and (c) the beneficial health and psychological outcome when environments offered enhanced fit.

Human factors engineering research has identified falls, which generally occur on stairways, floors, and in bathtubs, as the most common type of accident in the home (Czaja, 1990; Tideisksaar, 1989). Injury prevention data reflected that falls in the home are the twelfth leading cause of death in the United States and the single largest cause of injury among persons 65 years or older. Falls in the home represent the major source of lifetime medical costs ($35 million) due to nonfatal injuries (Pope & Tarlov, 1991). The multi-factorial nature of falls is widely recognized (Tinetti, personal communication, March 15, 1992). For example, retrospective studies of injuries in Howard County, Maryland between 1979–1987, indicated that injury from a fall is fourth among the ten leading causes of injury deaths across the age continuum. However, among those 65–74 years of age, injury from a fall becomes the third leading cause; and, among those 85 years or older, it is recognized as the leading cause (MIPCP, 1991).

**More Women Live Alone**

More Americans are living longer. Most women aged 65 and over are home alone and many live in poverty. In 1990 the proportion of those in America 65 years of age or older had reached 12% or about 30 million people. Comparing data on marital status and living arrangements for 1990 with projections for 2030 indicated that the number of unmarried elderly (65 years or older) will climb from 18 to 36 million. Of
those 36 million elderly, about 30 million will live alone, 5 million will live with relatives, and about 1 million will live with unrelated others (Zedlewski, 1990).

Women outnumber men at all ages among the elderly population and account for almost four-fifths of all older adults living alone. Those who live alone are recognized as the most likely to experience a fall. Statistics gathered in 1988, from studies by the Commonwealth Fund Commission on Elderly People Living Alone, showed that the percentage of women living alone increased with age. For adults between 65–74 years of age, 34% lived alone; for adults between 74–84 years of age, 51% lived alone; and, for adults over 85 years of age, 52% lived alone. The situation of women living alone will remain and the number of women living alone is expected to climb from 77% to 85% by the year 2030 (Kaspar, 1988).

More than 70% of all older adults own their home, and of these, 84% own their home mortgage-free. The 1990 housing survey of the American Association of Retired Persons showed 86% of the older adults surveyed wished to remain in their own homes, reflecting a 10% growth of persons holding this preference since the last survey four years earlier. This attitude continued into the older adults' later years despite changing physical abilities and/or a decline in quality of the home environment due to home disrepair that compromised safety and comfort. Frequently the phrase, "house rich and cash poor," is used to describe aging homeowners. Despite the need for repair, most homeowners cannot afford the needed changes.

Solutions need to be implemented in the near future that will reduce the onset of injury and disability faced by those experiencing ADL limitations and chronic (often
degenerative) disease as a countermeasure to the rapidly escalating health care costs expended on the increasing number of impaired elderly. The need for data collection to research the natural history of chronic illness and disability and the need to study the effects of changing functional status on daily behavioral and task performance problems has assumed critical proportions. Information is needed to increase the understanding of how and where specific preventive efforts can be most effectively targeted to prevent injury (Association of Trial Lawyers of America [ATLA], 1990; Berg & Cassells, 1990; Institute on Medicine, 1990; Oriol, Lidoff, & Murphy, 1992; Pope & Tarnov, 1991).

**Limited Research With Older Adults**

Rehabilitation literature supported the need for this phenomenological study. Articles heightened the awareness that despite disability, younger and middle-age adults previously receiving institutional or home-health rehabilitative care regularly regained the ability to perform personal care through modification of the home environment or through the use of assistive technology. These same strategies can be used to enhance personal task performance, with effective use of the changing physical ability, in older adults as well.

Data from the National Health Interview Survey on Assistive Devices (1990), showed that more that 13.1 million Americans, about 5.3% of the disabled population, were using assistive technology devices to accommodate physical impairments. Among the disabled population with chronic disabilities and using assistive technology, the majority (52%) were over 65 years, reflecting the higher prevalence of impairments with older adults. More than 2.5 million Americans (1% of total population) said they
needed devices that they did not have. During this same survey period, 7.1 million persons, nearly 3% of all Americans, lived in homes that were specially adapted to accommodate impairments. The most frequent types of home accessibility features were provided in response to mobility impairments. These home features included (a) hand rails, (b) ramps, (c) raised toilet and/or arm rails, and (d) extra-wide doors (Ficke, 1992).

During the past decade, rehabilitation research has directed attention toward establishing follow-up studies with disabled adult consumers who were formerly hospital patients and/or current recipients of home health services (Gitlin & Levine, 1992; Rogers, 1983, 1990). Adults with chronic disabilities continue to need assistive technology due to lingering deficits in task performance (Batavia & Hammer, 1990; Mann, 1992; Phillips & Roman, 1984; Rogers & Holm, 1991, 1992; Scherer, 1988, 1990). Research data suggested that solutions, based on consumers' real-world experiences, have enhanced the identification of both benefits and barriers. The most important criterion for evaluating an assistive device cited by the disabled consumer is whether the device satisfies the needs of that consumer. Those assistive technology evaluation factors considered by the consumer were considered by Batavia and Hammer through a small focus group process that looked at 11 types of assistive technologies (1990). Consumers experiencing mobility or sensory deficits reported that several relevant experiences were factors involved in choosing to continue using assistive technology. Difficulty was often realized in learning to use the device or in daily use of the device. Maintaining the device and/or repairing the device was too difficult or too
costly. Use of the device caused interference with the person's lifestyle and social activities at home or in the community. Use of the device caused physical, social or psychological discomfort or even physical danger. No system currently exists within the United States for evaluating the quality of these products.

Similar experiences have been reported by older women consumers who recognized specific functional limitations in the performance of daily tasks at home. No studies were found that considered the usefulness of assistive technology for these older non-disabled women who were experiencing functional limitations but were not yet healthcare service recipients through the acute medical care system (Czaja & Guion, 1990; Graves, 1991). Careful review of the literature and published research agendas, and ongoing dialogue with internationally recognized experts suggested a strong need for a phenomenological study of this kind that sought to understand the older woman's experience with using assistive technology (Brink, 1994; Christenson, 1990; Mann, 1994; Moran, 1993; Ward, 1991; Wylde, 1994). This study increased the understanding of the experience of learning to use assistive technology at home by the older woman who was experiencing functional limitations but still striving to live alone.

Local offices on aging regularly conduct needs assessment surveys to determine the effectiveness of their service delivery efforts to elderly community residents. For example, in Northern Virginia, Howard County, MD, and rural Maryland, survey results showed that older adults, particularly women, wanted information about assistive technology products, devices or techniques to help them regain independence in
important daily routines (Capital Area Easter Seal Society, personal communication, June, 1993; Harris, VonKahle, & Morris, 1984; Howard County Office on Aging, 1993).

Graves (1991), Director of the National Institute on Disability and Rehabilitation Research, identified the absence of specific information relative to methods to better integrate persons with impairments and disabilities into their communities and discussed the growing need to follow up with these same individuals as they age in place in their own homes. He emphasized the critical need for studies with older adult groups who are least studied: "Persons with functional limitations and disabilities who are entering their later years and will continue to provide a challenge for the rehabilitation and aging fields." Issues identified as critical for a proactive response to the aging imperative include (a) establishment of data bases on the use of assistive technology devices, (b) establishment of assistive technology and home modification education programs for aging persons with impairments, (c) development of accurate demographics describing the older impaired population, (d) understanding how decades of living with impairment may alter the normal aging process, and (e) establishment of the optimum use of assistive technology services, products, and devices to prevent excess disability.

**Critical Issue in Practice**

Physical frailty (i.e., loss of functional abilities needed to live alone) was widely recognized in the literature as severely diminishing the capacity of older adults to perform daily tasks and increasing the risk of falls and other unintentional injuries. Increasingly, community adult health educators seek proactive responses to this critical practice issue. Through educational gerontology, geriatric rehabilitation, and assistive
technology research, health educators have begun to gain awareness that older adults are never too old to learn to use strategies that compensate for performance deficits and enhance remaining abilities (Baker et al., 1992; Brubaker, 1989; Byrum & Rogers, 1987; Deily, 1989; Harris, VonKahle, and Morris, 1984; Howard County on Aging, 1991).

Very few teaching videos and resource manuals were found during my literature search and media review. Among teaching materials, the most relevant one is entitled, *Coping and Home Safety Tips for Caregivers of the Demented Elderly* (Deily, 1989). Developed by an occupational therapist it continues to be used for a caregiver education program and has gained national recognition. This occupational therapy adult education model is offered through the local office on aging. That office, the Jefferson Board on Aging, is part of the national network of 675 local Administration on Aging offices that have as an education mandate the requirement to offer information and referral about health and social services delivery to older adults. Unpublished information, to include conferences and meetings, about similar collaborative education programs administered by staff at offices on aging and occupational therapists, was discovered while performing this phenomenological study.

In June 1991 the Howard County Office on Aging (HCOA) Adult Community Evaluation Services (ACES) program director asked me to consult in the development of community education programs intended to introduce the use of assistive technology to older adult participants in Office on Aging programs. The intent of this education was to maximize the functional capacity of adult clients with impairments and to reduce risk of falls and injury at home for those served by these programs. By coordinating a
variety of local community resources and increasing the use of occupational therapists and occupational therapy students, the program supported participant's self-reliance and promoted self-esteem of frail older adults having difficulties with activities of daily living. Community services available for older adults include (a) assisted housing, (b) Senior Peer Resources, Individuals, Networks, and Groups (SPRING), (c) Senior Centers, (d) Health and Wellness Services, and (e) Support (Self-help) Groups (i.e., Stroke Club, Alzheimer's, and Caregivers Groups).

In an effort to increase information dissemination about this innovative collaborative adult health education approach, 10 national and two international, interdisciplinary, aging services provider conference presentations were completed. Aging offices staff comprise the largest component of the aging services provider network. Offices are expected to provide education resources for older adult community residents. Unfortunately, existing staff often possess limited gerontology knowledge. In reality, they lack even a basic understanding about assistive technology benefits for the aging. Offices of aging staff appear unaware of health care educators in their communities with whom they might collaborate to expand and enhance their adult education potential.

In view of the nation's aging imperative, it was recognized that increased emphasis on access to assistive technology and home modification information must be added to the gerontological curriculum content in basic and graduate occupational therapy education programs (i.e., the national network of 100 professional programs and 100 certified assistant programs). Many of these programs lack real-world, community based, student practice opportunities that introduce the importance of older adult
education in the use of assistive technology and home modification. Increased understanding of the experience of learning to use assistive technology by older adults is essential knowledge upon which future adult education and occupational therapy practice must be developed within emerging community-based, preventive healthcare service delivery models. Two occupational therapy programs in Maryland, Towson State University and Catonsville Community College, have found new student research opportunities are expected to continue student and faculty participation in the Howard County Office on Aging program.

**Statement of the Problem**

The major problem of this study was to elicit and understand the lived experience (i.e., the conscious experience) of six older women learning to use assistive technology based on their awareness of personal limitations in routine task performance. The phenomenon included the acts of thinking, believing, and perceiving task performance difficulties in everyday situations and choosing to learn to use assistive technology devices. The research question asked was: What is the experience like and what is the meaning of the experience of learning to use assistive technology at home? The unit of meaning or analysis was the spectrum of individual perceptions, thoughts, and feelings that define daily reality for the older woman (i.e., co–researchers) learning to use assistive technology as a way to continue living alone at home. I put aside all assumptions and preconceptions while listening to the co–researchers to see the phenomenon as if for the first time and allowed the experience of the co–researcher to speak for itself.
There is no doubt that with the passage of time many elderly persons confront a progressive inability to participate in daily activities of choice within their own home. As the physical and mental worlds of the elderly begin to contract, they become at increased risk for physical injury whether from a fall, an accident, medication mismanagement or just physical inactivity. My review of housing literature brought to light the importance of appropriate residential household construction standards (Davis & Kirkland, 1986; Gitlin, Levine, & Freda, 1991; Haber, 1988; Hiatt, 1992). Based on my literature review I recognized that these construction standards, originally based upon anthropometric data measures for normal males, six-feet tall and right-handed, are highly inappropriate for the group of older adults that includes proportionally greater numbers of women (American Institute of Architects, 1985; Bardagl, Dirrient, & Tilley, 1980; Barrier Free Environments I, 1991; Clark, Czaja & Weber, 1990; Committee on an Aging Society, 1988; Howell, 1980; Mann, 1991).

Assistive technology research was useful for the identification of critical issues for persons with long term disability (Cooper & Hasselkus, 1991; Cooper, 1985; Dahl, 1990; Falletti, 1984; Fozard, 1981; Galluzzo & Barr, 1989). Although impairment and disability are recognized as becoming more commonplace among the rapidly escalating number of older adults, the majority of older adults have not yet been in-patients, and indeed, may never become patients within the medical care treatment system. Therefore, in the current healthcare delivery system, functionally limited older adults have no opportunity to learn about the use of assistive technology. Increasing the
number of assistive technology users, through increasing access to community health education options, offers considerable potential as a preventive health education effort.

Frailty continues to be recognized as a major cause of long-term care needs, afflicting more than 3.25 million older adults with annual costs that exceed $80 billion. By the year 2030, long-term care costs are projected to escalate to over $170 billion. It has become common knowledge that the average medical costs for a nursing home placement often exceed $30,000 per annum, for an anticipated stay of three years. Extending the older adults' functioning abilities to remain at home for even 6 months can significantly reduce pressure on current health and financial resources. Of equal significance are the medical costs for treating hip fractures. Medical costs are approximately $10,000 per person, involving approximately 300,000 hip fractures each year, totalling about $3 billion (Ball, 1989; Zedlewski, et al., 1990). For many elderly persons, home modification and/or learning how to use assistive technology may be all that is necessary to reduce the likelihood of falling and fracturing a hip. The frequency of need for more costly informal and formal social and medical support services at home may also be reduced (Hiatt, 1992; Oriol, Lidoff & Murphy, 1991). Providing a more cost effective alternative to the development of unnecessary disability, premature dependency, housing relocation and/or unnecessary institutionalization for the older adult with chronic pathology and functional limitation was an important objective of this research (Hirschlein, 1989; Howell, 1980; Kaplan, 1973).
**Purpose of the Study**

The intent of this research was to listen closely to the older women, serving as "co–researchers," describe their lived world experiences involving aging alone and learning to use assistive technology while performing daily tasks in their own home. With prearranged consent, I recorded three, one hour, face-to-face interviews with each co–researcher. The co–researchers maintained daily handwritten log commentaries for one week. Diaries captured the older adults' precise language describing the experience. It enabled the co–researchers and I to recognize and better understand thoughts, beliefs, and perceptions expressed as they described moving through daily task performance routines (Asmuth, 1987; Barritt, Beekman, Bleeker, Mulderij, 1983; Csikszenmihalyi, 1982, 1992).

The extensive network of providers of aging services recognize that knowledge of the aging process is still relatively primitive when compared to other areas of health and human development. A critical need exists for better understanding of the lived world of older adults through the eyes of that population. Educational gerontologists and adult health educators (i.e., occupational therapists) are realizing the importance of collaborative exploration with the elderly population to look at the relationship between the older adult living in his or her home of choice and the design features present in that household (i.e., the built environment which may be creating limitations to task performance and independence), and to look at those objects regularly used to perform routine tasks in a typical day and the use of new, assistive technology.
Significance of the Study

This phenomenological research increased the limited understanding of how the older women learn to use assistive technology through listening to their lived world experiences. Looking through this window into the individual realities of six older women, perspectives contributed to and expanded the knowledge base about the process of learning and how older women learn to cope with functional limitations in daily task performance. It is upon this emergent and developing groundwork that more fruitful educational interventions for older adults, as well as the broad spectrum of adult health educators, including occupational therapy practitioners, can be realistically and more appropriately developed. In view of the rapidly changing medical and social service delivery systems, it can be anticipated that new and more appropriate older adult education programs will become a part of community-based aging service delivery models.

Use of the phenomenological approach expanded the appropriate use of qualitative research methods as a way to better understand the lived, real-world experience of women growing old, alone, and at home. Increased understanding was sought about how women adapt to changes in their abilities to perform routine tasks, how they learn to use assistive technology, and how to determine the optimum use of assistive technology. This study contributed data for a group that has not been well represented in the research literature. Eventually ongoing research might lead to the development of longitudinal data addressing the use of assistive technology and home modification techniques by older women. The outcome of such research could
contribute to the delineation of positive and negative effects of universal and individual technologies, to the discernment of the optimum use of assistive technology services and devices as a way to reduce impairment and the development of disabilities, and to actual solutions to a representative sample of product designs.

**Ancillary Benefits of the Study**

Ancillary benefits of the results of this study included:

1. The results facilitate learning by other older adults who choose to experience the use of assistive technology to modify the demands of task performance and the home environment.

2. The results provide opportunities for older adults to participate in and contribute to research which can pave the way to better integrating the impaired elderly into their communities.

3. Heightened awareness of the critical role played by both home and task environment in limiting or enhancing functional abilities of these older women can influence the development and implementation of education programs.

4. The study facilitates information dissemination that was identified by the Committee on a National Agenda for Prevention of Disabilities (Pope & Tarlov, 1991) as a critical solution through which America might better integrate aging persons with impairments or disabilities into their communities, and facilitates continued productive activities within the home setting, thereby enhancing lifespan growth and development.
Summary

The torrential "Age Wave," described by Dychtwald and Flower (1989), continues to sweep across the American continent, creating increased demand for enhanced aging services delivery. Older women experiencing the real-world challenge of adapting to demands of task performance and home environment described the experience of learning to use assistive technology at home as useful for increasing task performance capabilities.

The questions raised in this phenomenological study were: What is the experience of learning to use assistive technology at home and what is the meaning of that experience? The desire to age in place has long been preferred by older adults and is clearly evidenced in the literature. The changing fabric of America's elderly has allowed that preference to become an increasingly significant issue in older adult health education practice. Of primary importance in this phenomenological study was the nature of the information offered by each of the co–researchers. The intent was to focus on the process of aging and the meaning of daily task limitations to women, 65–85 years of age, from each individual's perception. The use of phenomenological research suggests one is looking beyond a causal web, seeking instead to understand what makes a situation or event as it is and not otherwise (Oiler, 1982). Through careful interpretation of individual perceptions, I expected to uncover a variety of understandings of and reactions to essentially similar circumstances (Omery, 1983). Phenomenological research encouraged the co–researchers to assume an ongoing reflective posture whether engaged in data generation or commentary. The end result
was an integral component of an encounter that transcends the experience of both participants (Barritt, Beekman, Bleeker, & Mulderij, 1983). This qualitative, phenomenological study illuminated the understanding of the meaning of the lived experience of older women, living alone in their home of choice, learning to use assistive technology as they strive to adapt to their impairment.
CHAPTER II
REVIEW OF THE LITERATURE

Introduction

This chapter will provide an overview of literature that contributes to better understanding the experience of older women, just introduced to the use of assistive technology, who are learning how to use the technology at home. The various citations reviewed highlighted what had been done and where gaps existed in the current research and clarified how this study would contribute to increased understanding of the life-worlds of older women. The literature search was initiated through various computer searches. A review of relevant literature was completed in diverse disciplines including (a) adult education, (b) educational gerontology, (c) public health education, (d) rehabilitation and disability, (e) environmental psychology and universal housing design, (f) occupational therapy, (g) human factors engineering, (h) aging and technology, and (i) assistive technology services and products.

The five conceptual frameworks, which provided the foundation on which this phenomenological inquiry has been anchored during its development, bear clarification in order that the reader understand how this study has been organized. The first, Knowles' (1985) adult education framework includes tenets that are likely to influence older women's ability to learn: (a) self-direction, (b) experiential wisdom, (c) influences of social roles, and (d) preference for immediate application of learning. Another, Nagi's (1969) functional limitation framework, is drawn from the rehabilitation literature,
and fosters consideration of preventive interventions rather than focusing on the consequences of pathology as experienced by older women. A third, Kielhofner and Burke's (1985) framework of human occupation addresses the implicit and explicit factors of the physical and social demands of the home environment for older women. A fourth, Roger's and Holm's (1991) ecological model of task performance, defines the interactive component between personal abilities of women and the demands of their home surroundings. Both of those concepts are drawn from the occupational therapy literature. Finally, the health belief model from the community health education literature, offers a framework which complements all of the above described concepts. Specific health behavior decisions are based upon a woman's personal beliefs about the home environment and the self, and are reflected in her present cognitive and affective orientation.

**Adult Learning Continues into Late Adulthood**

In the 1961 reprint of Lindeman's seminal work, *The Meaning of Adult Education*, his first chapter addressed those who need to be learning. Learning is perceived as a natural and pervasive human activity, enabling individuals to adjust to change. He conceived of learning as a process occurring throughout the entire span of life with its purpose "to put meaning into the whole of life" (p. 5). He felt learning to be situational, given that life situations call for adjustments. Considering areas where people find life's meaning, he said, "meaning must reside in the things for which people
strive, the goals which they set for themselves, their wants, needs, desires and wishes" (p. 8).

Earlier research of Talcott Parsons (Parson & Shils, 1951) led to development of social action theory, which addressed reasons an individual or a group identifies for initiating action. Action was felt to be guided by the meaning that the person attaches to a particular sequence of steps according to how strongly that action relates to his goals, wants, needs, desires and wishes. In the study, two types of learning were identified: instrumental and expressive. Later research by Havighurst (1964) specifically defined instrumental learning as reflective of time spent with expectation of some future gain, and expressive learning as typically anticipating more immediate applicability.

Building upon Parsons and Havighurst's research studies, Londoner's (1985) development of a motivation-participation framework included social psychological needs, social system, and goal gratification within a construct that incorporated both instrumental and expressive learning. Londoner felt that adults into their later years demonstrate strong commitment to sustaining psychological and physical health and well-being, and maintaining satisfactory social adjustments. He identified survival skill mastery as a major priority for older adults in later years.

The notion that older persons cannot learn is a stereotype that often plagues the aging adult (Knowles, 1985). Some researchers suggest that learning done by older adults occurs differently from learning done by younger persons (Hollander & Plummer, 1986; LaBuda, 1988). Morstain and Smart (1974) reported on the benefits older adults perceived in continuing education, including professional advancement, escape, general
stimulation, stimulation of cognitive interests, and enhancement of social relationships. Knowles (1985) described basic tenets relative to his adult education theory and older adult learning. He felt that personality changes evolve from a dependent to self-directed focus, accumulated experiences improve the ability to learn, motivation toward learning is often related to social roles, and learning that can be immediately applied is preferred.

Lifespan learning for increasing numbers of older adults is on the upswing (Dychtwald & Flower, 1989). In the past, much of the educational gerontology literature addressed the young-old populations (50–64 years), adult learners in their middle age years. Fortunately, within the past decade more attention has been directed toward lifespan learning and the importance of educating older adults 65+ about issues of increasing interest in their retirement years (AARP, 1990; Dychtwald & Flower, 1989). In addition to meeting many of the same objectives for younger adult learners, such as upgrading occupational skills, other needs have been identified like keeping mind and body alert and active and productive use of increased leisure time in the retirement years (Knowles, 1985; Moody, 1985; Morstain & Smart, 1974). Stearns, Factor, Heller and Sutton (1992) defined lifespan learning as a stimulus to maintain functional effectiveness and improve life quality for older adults. Evidence of adult interest in learning for learning sake (Asmuth, 1987; Csikszentmihalyi, 1982, 1992) and lifespan learning can be seen through research describing the rapid growth and increased interest in older adult learning experiences, such as the Elderhostel movement (AARP, 1990; Ansley & Erber, 1988; Brady, 1984; Dychtwald & Flower, 1989; LaBuda, 1988).
Csikszentmihalyi (1992) speaking to an audience of occupational therapists, recognized that they would be particularly interested in his research. Psychologists and occupational therapists are keenly interested in what people do and recognize that what people do is intertwined with emotional health. As a psychologist, he has long been interested in what adults do every day and how they feel about what they choose to do. He has developed a data base on more than 25,000 people. Using beepers to sample informants, he gathers interview data via interviewing at random moments about the meanings of activities in which they are engaged at that time. These findings further support his concept of "flow," which he defines as the adult's feelings of being totally engaged and recognizing a sense of increased concentration and changed awareness of time (Csikszentmihalyi, 1982). That degree of satisfaction from doing an activity or performing a task appears to be a match between skill level and the amount of challenge inherent in the task.

Csikszentmihalyi's (1982) view is that the challenge felt from successful task completion clearly has an integrative function and is what stimulates continued adult growth and development. This emerging information supports the importance of phenomenological inquiry as a way to better understand the meaning and centrality of enabling continued task pursuit in older people's lives. His research is expected to contribute further understanding about what the enhancement of skill level for task performance can mean for older adults. Health educators, including occupational therapists, seek better ways to facilitate learning, contributing to late life growth and development and fostering health behavior change.
Public Health Education

Published health education research reflects increasing data that reduction of fall and injury risk can happen through education enabling adults to modify personal beliefs and heighten their awareness of the role played by the household and community environment on independence and safety in activities of daily living task performance. One very successful approach to community health education and prediction of health related behaviors has been reported in research that incorporates the Health Belief Model (HBM) as a framework (Baker et al., 1992; Walker-Peterson, personal communication, January 25, 1995). This framework supports the awareness that a persons' belief system (present cognitive and affective orientation) about the environment and self directly affects the attitudes that in turn influence specific behavior regarding personal health decisions. In this phenomenological inquiry, older women may have perceptions of susceptibility to fall, injury or illness. They may choose to learn about assistive technology as a way to increase safety and continue living alone. They may perceive that learning to use assistive technology will be one way to maintain personal control and increase motivation to resume daily task performance.

The Yale Falls Prevention study by Baker, Tinetti, Garrett, Gottschalk, Koch, Trainor, Klaus, and Horwitz (1992) supports the effectiveness of the HBM where older adult participants weighed fall risk factors and decided that health-related behavior changes were personally meaningful and advantageous. In discussions about this study, one researcher mentioned that although the principle investigator did not address the use of assistive technology, he planned to address it in the next study. Therefore, one
question that emerged from this study is what cue to action, that is what triggering event, could lead the older adult to explore using assistive technology as a strategy to modify task and environment demands, hopefully contributing to improved fall risk reduction and enhancing routine daily task performance (Tinetti, personal communication, 11/21/92).

**Gaps in Older Adult Task Performance Research**

In 1987, the Panel on Human Factors Research Issues for an Aging Population, was formed by the National Research Council, in response to the need for increased task performance research from the National Institute on Aging. The National Institute on Aging expressed concern about the paucity of research information available to describe the performance of the aging population as physical change occurs and the ability to carry out daily activities declines rapidly.

Summarizing the results of this panel's efforts, Czaja's (1990) monograph, *Human Factors Research Needs for an Aging Population*, identified the need to: (a) improve the knowledge base, (b) make technology more responsive, (c) improve dissemination of knowledge, and (d) assure wider implementation of remedial techniques already available. Issues of older consumer concern related to safety and security. Current literature does not include sufficiently detailed information on person and task characteristics, environmental features and demands, and product features. Rather, it deals inadequately with real world tasks (Welford, 1985).

The inability of older adults to effectively perform daily routines at home is clearly linked between the design features of the home and routine daily task demands,
it is a person–environment problem. A transactional model of human performance suggests that solutions for older adult ADL deficits lie in modifying task demands and improving product and home environment design (Stein Gerontological Institute, 1994). Informational needs cited by Czaja's committee and of prime research importance include: collect systematic data where none exists on task demands, situations, and activities; to compare demands across tasks so that representative tasks could be selected for more detailed analysis; to create functional norms and dynamic anthropometric measures; to provide task analysis to fill in gaps in the current knowledge base; to determine actual solutions to a representative sample of product design problems.

At the recent International Association of Ergonomists meeting in Toronto, Canada, researchers and educators explored new strategies to increase consumer involvement in the design and production of assistive technology products. Proactive response to that need by participants led to the creation of an INTERNET correspondence committee who will conduct an ongoing dialogue regarding the "Useability of Assistive and Rehabilitation Technology (USER)."

Considerable attention has been given in the literature to the collaborative development of the electronically controlled "Smart House," coordinated by the National Association of Home Builders (Davidson, 1989; Electronic House, 1991; Harris, 1988; LaBuda, 1988; Smith, 1988). Located in Upper Marlboro, Maryland, it demonstrates an environment incorporating multiple practical applications of modern space age technology useful for both the general aging population, as well as persons with disabilities. It was publicized as the home providing a resident with the height of

More recently in Maryland the concept has been further enhanced at the "Future Home." Funded by corporate donations and the group, Volunteers for Medical Engineering, every room within an historic farm house has been renovated. Open as a model renovation site for public review during weekdays, the installation of high tech electronic equipment demonstrates how a severely disabled person can be in complete control of home management, including the operation of a home business. Although the temporary residents are a young man, severely disabled as the result of a high level spinal cord injury, and his wife, others assisting him in conducting public demonstrations are older persons with a wide range of abilities. Visitors leave with positive impressions about the use of assistive technology as a strategy for aging in place.

The stereotype that older adults are resistant to technology and learning how to use technology has recently been disputed by much of the research being done in this area. Ansley and Erber (1988) studied older adults' interaction with computers and the effects of that interaction on attitudes and performance. Subjects with an average of 13
years of education were asked to participate in a vocabulary quiz either on the computer or with pencil and paper. No significant performance difference was found in accuracy or in response time between the two groups. Other studies have been published describing the introduction of personal computers to residents in skilled nursing facilities.

**Impairment, Functional Limitations, and Disability**

Disability profiles indicate that older adults living at home are one of the largest and fastest growing segment of our society, and that among those 65+ years, one in nine already experiences functional limitations. The impact of impairment day in and day out is generally assumed to be that which is expected with aging. The apparent acceptance of impairment as a normal component of aging lead to increased disability and dependency at a younger age. In some cases this disability and dependency can lead family caregivers to opt for premature admission for family members to an institution (Smith, 1992; Taira, 1984).

Awareness of the well-recognized theme within gerontological literature, the preference of older adults to remain independent and to stay in their own homes, suggests the need for increased community education introducing strategies which would enhance aging in place. Because the preference to stay in one's own home continues into the later years, despite changing physical abilities or declines in environmental quality (AARP, 1990; Berg & Cassells, 1990; Czaja & Guion, 1990), a critical question arises, how can aging services delivery programs provide education and or assistance to the increasing number of women with activity limitations who live alone? What kinds
of self-help strategies will enable them to continue in their highly valued, life-world social roles?

Marital status and living arrangement statistics earlier cited (Zedlewski, et al., 1990) project continued growth in the number of women living alone, climbing from 12 million today to 30 million by 2030. This projection presents a rather bleak perspective, raising the specter that a pandemic of chronically impaired, dependent older women is being created. Increasingly, aging services providers and health educators need to consider collaborating in the development and implementation of community education programs. Cost effective efforts can be employed that will reduce the likelihood of that pandemic emerging (Deily, 1989; Shamberg, 1991; Twibble, 1992; Wrightson & Pope, 1989).

The literature documents well the fact that older adults frequently experience difficulty remaining at home because routine tasks are problematic (Ambrose, 1994; Anme, et al, 1994; Berg & Cassels, 1990; Brink, 1992; Clarke et al., 1990; Falletti, 1984; Filloux, 1994; Ficke, 1992; Harvey, 1994; Hayashi, 1991; Kose, 1994; Mann, 1992; Moran, 1994; Morini, 1994; Rogers, 1990; Smith, 1992). In 1984, 4.9 million elderly persons experienced limitations in one or more ADLS with 2.5 million having limitations in four or more. Ficke's (1992) compendium of data and projections shows that by 2030 the numbers needing help in one or more ADLs will rise to 16.3 million and in four or more ADLs, 5.8 million.

Rapidly escalating health costs of caring for an increasing number of older adults with impairments demands that effective solutions be identified which could reduce the
premature onset of disability faced by those experiencing ADL limitations and chronic
disease (Berg & Cassells, 1990; Pope & Tarnov, 1991). Data from the National Long-
Term Care Survey and the National Nursing Home Survey (1984–1985) reflected the
impact of the effects of age on the probability of having functional limitations in ADLs.
It is abundantly clear that we face an escalating and extremely critical problem! The
problem for which solutions must be found is the reduction of the practical effects on
older adults of deficits in daily living task performance through mitigating the effects of
disability, at a cost that American society can better sustain (Ball & Bethell, 1989;
Zedlewski et al., 1990).

In the National Medical Expenditure Survey (NMES, 1987), equipment used to
reduce mobility limitations included: walkers, canes, crutches, and wheelchairs.
Assistive technology devices and home products used to assist in coming from sit to
stand posture were grab bars, toilet arm railings, and seats in tub or shower. In bathing,
dressing, toileting, bed or chair transfer and feeding, adults are most likely to be aided
by others. About one in seven persons experiencing difficulties receives home care.
The most frequent types of formal home care assistive services received are housework,
bathing, nursing, and meals.

It was earlier mentioned that unless adults have been hospitalized, it is unlikely
that they will be aware of strategies such as learning the use of assistive technology to
modify task or environmental demands. The gerontology literature indicates that older
adults generally ignore the progress of functional loss, leading to the onset of premature
disability or housing relocation and even institutionalization. It seems likely that an
educational approach might offer potential and serve as a proactive response to this behavioral characteristic. The introduction of learning opportunities that encourage the older adult to explore modification of demands of task performance and household surroundings appears to offer promise as a preventive education effort.

**Task Performance, Environmental Fit and Technology**

Using the broad definition of occupation and environment as proposed by Kielhofner and Burke (1980), individuals are viewed as open systems. We seek and receive information through highly complex sensory integrative feedback systems that rely on both intrinsic and extrinsic environments. Daily, older adults get out of bed, wash, dress, eat breakfast, and select work or leisure pursuits. The various task performance environments include: objects, tasks, individuals, groups and culture, all of which impact directly upon successful or unsuccessful performance of activities and contribution to social roles (Jette, 1987; Johnson, 1988; NCOA, 1986; Salmen, 1988; Schreter, 1991; Sanford, 1992). Task performance is influenced by many factors. Included are the interaction of personal abilities; the object or tool chosen to do the task; the physical setting where the task is performed; and the cultural values and beliefs of the individual (Fogel, 1992; Hare, 1992; Javernick, 1991; Kaplan, 1972; Law, 1991; Lawton, 1972, 1982, 1985; Lifchez, 1991; Lifchez & Winslow, 1981; Mace, Hardie, & Place, 1990; Mendelsohn, 1986; Monk, 1988; Moos, 1974; Pastalan & Carson, 1970; Peloquin & Watson, 1991; Phillips & Roman, 1984).

Environmental intervention through education is based upon assessment of a person's occupational behavior or functional capability and includes identification of
abilities or deficits in the following aspects of activities of daily living performance: pre-skills, skills, habits, and perceived self-competence (Cooper, Ahrentzen, & Hasselkus, 1991; Jette, 1987; Lawton, 1972; Liu & Cornelius, 1988; Taira, 1984; White, 1986). Pre-skills include psychological and biological abilities. Psychologic pre-skills are: attention, memory, problem solving, communication of needs and feelings. Biologic pre-skills include: joint range of motion, muscular strength, manual dexterity, and balance and mobility.

Skills evaluation is based on structured performance observations in the home setting. Habits appraisal explores what the older adult currently does routinely in his home (e.g., what are the older women's daily priorities?). The issue of past activity history and future potential is of interest in this aspect of the evaluation. Perceived self-competence refers to the individuals beliefs about their capabilities to do specific tasks. Occupational therapists, skilled in functional assessment of clients' task performance within various contexts including the home environment, collaborate with clients to design and direct individualized learning toward interventions aimed at regaining competence (Lawton, 1972; Liu & Cornelius, 1988).

Kielhofner and Burke's, Model of Human Occupation (1980) has been useful in planning this phenomenological inquiry as a frame of reference because it addresses a wide range of areas that are of critical importance in community living such as a person's values, goals, interests, daily roles, habits and performance in ADLs. Through emphasis upon an older adult's performance in daily activities, it takes into account
strengths and limitations in the areas of cognition, physical functioning and interpersonal skills.

Another frame of reference, Roger's and Holm's (1991) ecological model of task performance, has guided the development of this study because it defines the interactive component of ADL performance between the fit of the woman (i.e., individual abilities or limitations), and her environment (i.e., tools and physical surroundings). Task capabilities of older women can be viewed interactively, as a function of their abilities (physical, cognitive and affective) and the demands of objects and structures in the environment (Barris, 1982; Brubaker, 1989; Bynum & Rogers, 1987; Clark, Czaja, & Weber, 1990; Dahl, 1990; Davis & Kirkland, 1986; Deily, 1989; Egan, 1992; Galluzzo & Barr, 1989).

Within the category of ecological task environments, the area of accessible and universal housing and product design has gained national attention over the past two decades (AIA, 1985; Altman, Lawton, & Wohlwill, 1984; Connell, Sanford, Long, Andrea, & Turner, 1993; Currie, Ast, Cohen, Genther, Gordon, & Mascal, 1978; Davies & Beasley, 1992; Hare, 1992; Hirschlein, 1989; Howell, 1980; Kaplan, 1972, 1973; Kiewel, 1984; Lifchez, 1991; Lifchez & Winslow, 1984; Mace et al., 1990; Peloquin & Watson, 1992; Phillips & Roman, 1984; Pirkl, 1994). The assumption that housing design can be user friendly and match the profile across the impairment continuum has been more frequently addressed in Europe and New Zealand where it is viewed as assuring increased safety of residents (Presier, Vischer, & White, 1991; Regnier, 1987;

Universal design in housing is being addressed more frequently at national and international conferences. In 1991, the conference, "Senior Safety: Preventing Injury to Older Americans," sponsored by the Association of Trial Lawyers of America (ATLA) and the Johns Hopkin's Hospital Injury Prevention Center, speakers addressed the need to heighten consumer awareness of "universal housing and products design." They stressed the critical need to make home and public environments more compatible with people of all abilities and disabilities. The issue of establishing effective safety standards for specific home design features was emphasized: stair risers and stair treads, handrails, electrical outlets, and reinforced walls to support stairway railings and grab bars, adjustable heights in kitchen and bath, and hard surface anti-skid and non-glare floors in entrance and circulation areas.

Members of ATLA adjudicate cases for older consumers who have sustained home or community injuries. The majority of older adults live in single family homes, which as older housing stock are sorely in need of modification to correct basic problems of safety. Increased technical assistance, as well as the availability of more educational programs would encourage consumers to modify earlier, before injury occurs.

A rapidly growing body of literature is emerging in the related area of specialized senior housing and supportive services (Japan International Scientific & Technical Exchange Center [JISTEC], 1994; Presier, Vischer, & White, 1991; Rascho,
Internationally recognized researchers have provided data in this literature reflecting similar needs in their respective countries as those that are mentioned above. Included are: (a) accessible bathtubs and showers, (b) adjustable height cabinets, and (c) counters (Ambrose, 1994; Anme, 1994; Brink, 1994; Christianson, 1990; Kose, 1994; LaBuda, 1985; Moran, 1994; Pirkl, 1994; Pynoos, 1992; Regnier, 1991; SESH, 1991; Wrightson & Pope, 1989; Wylde, 1994); water-temperature control devices, improved acoustic materials, increased lighting levels, user friendly floor and stair surfaces, uniform floor levels (Tideisksaar, 1989); illuminated stairways and appropriate sized hand rails (Pauls, 1984); and flashing-light smoke alarms and telephones (U.S. Department of Health & Human Service, 1990).

The National Directory of Home Modification/Repair Programs (1991), compiled by the Long Term Care National Resource Center at UCLA/USC, summarized results from a national survey of home repair programs located in local offices on aging. Data clearly showed a commonality in repairs funded, lending positive support to the critical need for consumer education about home retrofit and use of assistive technology services and products. Frequent modifications cited are: hand-rails, grab bars, door knobs, electric switches and outlets, sink/shower hardware, flashing lights, deadbolt locks, screen installation, smoke detectors, slip resistant flooring and stairway risers, and water temperature regulation.

Participating in a 1992 teleconference that focused on Housing Modification, the director of the Philadelphia, PA, Senior Housing Assistance Repair Program (SHARP) addressed the growing need for expanding consumer education. The goals of the
program include: (a) heighten recognition of housing modification needs, (b) introduce the cost reductions realized in the SHARP program through quantity purchasing, and (c) emphasize the advantage offered by access to occupational therapy consultation.

The Research Center of the National Association of Home Builders (1991) summarized modifications made to low income housing in, *A Comprehensive Approach to Retrofitting Homes for a Lifetime*. Retrofit recommendations were made for solving access problems in areas where accidents occur frequently—the entry, kitchen and bathroom, and are similar to those identified by programs described in the National Directory. Demographic projections included reflect awareness that as the population over 75 years of age continues to grow demands for home modification will increase.

**Assistive Technology Education Services, Devices, and Products**

The successful passage of Public Law 100–407 in 1990 reflected the increasing significance and recognition of the civil rights of the growing number of individuals with disability in America. Access to assistive technology services (ATS) and assistive technology devices and products, earlier defined, have therefore been increased, on paper at least, for the 40 million individuals identified as disabled Americans (ARCOR, 1991; Caston, 1985; Enders & Hall, 1991; Mann & Lane, 1991).

There may be a very thin line between one who is experiencing functional limitations and one who identifies herself as having a disability (Nagi, 1969, 1991). Consider, if you will, the rapidly escalating numbers of older adult women who are realizing deficits in performance of daily activities. If no solution to task performance deficits are suggested to them, how soon will these women step into the disabled adult
category? Phenomenological inquiry in this study offers the chance to increase understanding of the experience of learning to use assistive technology as a way through which older women might adapt lifestyles to compensate for functional losses.

ATDs are generally self-managed, and as a device or system initiates, substitutes for, amplifies or monitors a human function and or an environmental feature so that task performance can be enhanced (Galvin & Philips, 1990; Geiger, 1990; Rogers & Holm, 1991). Therapists and other rehabilitation professionals regularly prescribe and teach older adults with disabilities how to use ATDs, which enable them to interact more effectively within their chosen environments. ATDs may be added to the person, (e.g., eyeglasses or a walker) or to an object in the environment, (e.g., a grab bar placed on the tub/shower wall or side of tub or a raised toilet seat). There are approximately 17,000 ATD items (Enders & Hall, 1991).

Use of ATDs reported in the literature results from the younger physically disabled adult populations. Introduction to the ATD has generally been made during acute care or rehabilitation therapy programs. Use of assistive technology services and products has been widely studied in the occupational therapy literature, and more recently in the rehabilitation and rehabilitation engineering literature. In the occupational therapy literature, studies about older populations experiencing arthritis were most frequent. No studies were found that introduced the use of ATDs to older adult populations who describe themselves as the "well elderly" not as individuals with disabilities.
Other studies involved younger populations who had experienced traumatic brain injury, stroke, and spinal cord injury, and received treatment in the acute care system. Most research involved hospital follow-up studies to evaluate the current level of personal independence and the extent of actual community reentry. These studies looked directly at the impact which ATDs have on functional status, disease activity, perceived benefits, and mental and social health.

Results consistently showed a relatively significant and beneficial treatment effect for ATDs. When clients were introduced to ATDs, they regained better physical functioning and increased independence, and they perceived themselves to be mentally and socially happier than those who do not receive ATDs. Clearly then ATDs are a very useful strategy for enabling individuals to reestablish themselves either after an illness or once chronic disease processes have started (Gitlin, Levine, & Freda, 1991; Kaplan, 1973; Lesnoff-Caravaglia, 1993; Mann, 1992; Mann, Karuza, Hurren, & Tomita, 1993; Mann et al., 1994; Rogers, 1990; Rogers & Holm, 1991).

An increased interest in learning new information about ATDs is evidenced by physically and cognitively disabled middle aged adults (Gitlin, Levine, & Freda, 1991). Awareness of new items by persons not receiving rehabilitation (i.e., assistive technology services) generally occurs through reading the mail order catalogs that describe ATDs. The inordinately fine print in these catalogs limits access to information by the great number of older adult consumers with vision impairment. Indeed, for those with beginning cognitive loss experiencing word processing limitations, the written word is no longer an effective communication medium.
The "Consumer Needs Assessment Project," a 5-year qualitative study implemented by the Electronic Industries Foundation (EIF), conducted nationwide focus groups. Clients disabled for many years described ideas of their own to solve emerging personal problems created by the aging process, added to existing disabilities. In many cases, similar ATDs already existed, but these chronically disabled adults had not known of their availability (Batavia & Hammer, 1990; Phillips & Roman, 1984; Ward, 1991). In 1994 the EIF began another innovative project, working with electronic home appliance manufacturers to determine their receptiveness to a universal design labeling process that might help consumers select devices which would be designed to better match differing abilities.

Frail, impaired older adults 75 years or older, the most rapidly growing section of the aging population, and family, friends or caregivers who will be assisting them, need to gain opportunity to learn how to use products, and to gain access for purchasing appropriate ATDs. David Wolfe (1993) reminded the reader of five key values that can help determine the behavior of older persons. These five values are: autonomy and self-sufficiency, social connectedness, altruism, personal growth, and personal revitalization. Authors cited below served as faculty at the 1994 Think Tank, "Design for Maturity," organized by the Business and Aging Forum of the American Society on Aging. Dialogue between adult health educators, aging services providers and entrepreneurs explored strategies for developing consumer marketing educational materials through increasing access to manufacturers' education about the processes of aging (Christenson, 1994; Furlong, 1994; Kunkel, 1994; Mann, 1994; Meredith, 1994;
Rogers, 1994; Schewe, 1994; Suther, 1994; Wylde, personal communication, June 19, 1994).

To gather information related to this study, review of current conference abstracts from international, national and regional conferences provided valuable information and helped to identify researchers exploring relevant topics. The following projects, described at selected conferences, were subsequently validated through personal communication with individual researchers. Those that were influential in the development of this phenomenological inquiry included: "Team Independence" in Miami, Florida (Weber, personal communication, November 20, 1993); "Personal Home Assessment for Successful Aging" in Los Angeles, California (Pynoos, 1994); "Operation Independence" in Columbia, Maryland (Madachy, 1994); "Senior Tech" in Baltimore, Maryland (Brokos, 1994); "Project Link" in Buffalo, NY (Stone, 1994); and "Japan Abilities" in Tokyo, Japan and "Abilities Life" in Okinawa (Sammon, personal communication, January 20, 1995).

Similarities among these education programs included the use of multidisciplinary staff and the implementation of community education programs targeting small groups of Medicare-eligible, older adults living at home. The older adults were introduced to home safety evaluation lists, offered professional environmental assessment and functional assessment to determine ADL abilities. Appropriate housing modification recommendations, experiential training in the use of products and follow-up was provided consumers in learning to use appropriate ATDs.
The acceptance and success reported by the participants led to increased awareness of ATDs, implementation of environmental modifications, and adoption of other health behavior changes. Feeling empowered, older adult learners gained motivation. Reaching out, they shared this new learning through peer demonstration. They demonstrated benefits they had seen by using assistive technology to modify task and home environment demands. They became interested in increasing access to ATDs, education in their use, and sought funding options for expanding programs (Clark, Czaja & Weber, 1990). The learning was highly valued by these populations. Preliminary findings indicated a high yield of newly identified problems; an average of three recommendations were made per participant. Clients in the California program had significantly fewer falls and used less over the counter and prescribed medications than controls (Fabacher, 1991, personal communication).

Evolving research yielding highly relevant results was found through review of conference abstracts of sessions describing assistive technology studies initiated in 1993–94. Two Rehabilitation Engineering Research Centers (RERC) at the State University of New York at Buffalo (SUNY) are conducting separate longitudinal projects. They are the Rehabilitation Engineering Research Centers for Assistive Technology and Environmental Interventions for Older Persons with Disabilities (RERC–Aging) and Technology Evaluation and Transfer (RERC–TET). A third study completed at the Washington, DC, National Rehabilitation Hospital (NRH) was also cited. These studies established consumer evaluation criteria for persons who had received prior rehabilitation education. A fourth study at the Thomas Jefferson Hospital
and the Magee Rehabilitation Center followed discharged patients over time to observe sustained use of assistive devices and successful community reintegration. These facilities are implementing programs aimed at improvements in the practice of evaluating, selecting and applying ATS/ATDs (Galvin & Phillips, 1990; Gitlin & Levine, 1992; Mann, 1992; Phillips & Roman, 1984; Stone, 1994; Ward, 1991).

Users' comments of particular interest identified why they elect not to continue using ATDs. Included were: (a) device failure, (b) delay in receiving equipment, (c) changing needs and daily living demands from hospital to home setting, and (d) interference with the individual's lifestyle continued. Major problems were: (a) limited community information resources to respond to consumer difficulty in using the product and accessing new products in the community, (b) social discomfort in using the ATD, and (c) excessive costs for the item and its repair.

In 1994 personal involvement with Professional Advisory Boards for newly funded research studies defined a rapidly increasing demand for older adult consumer education. Participation as faculty at multiple conferences heightened my awareness of the international scope of this critical issue. Personal dialogue with faculty at pre–White House Conference on Aging events (Mann, personal communication, December 1, 1994; Pynoos, 1995; Stone, 1995) further reflects the escalating importance of the topic of assistive technology education for older adults. Obviously, the topic's significance has grown during the time frame of this inquiry.

Recent investment of research monies attests to the Federal recognition of this critical need to determine consumer perspectives regarding more appropriate assistive
technology product design. Attention has been directed toward identifying the most appropriate learning strategies that facilitate education about and mastery of assistive product use. Support is given to the growing demand for increased access to education about assistive technology products and accessible housing products. Recognition is made of the need to gather current data on the use of assistive technology by elders—a highly understudied and clearly an underserved population.

At SUNY Buffalo's two Rehabilitation Engineering Research Centers, Assistive Technology and Environmental Interventions for Older Persons with Disabilities (RERC-Aging) and Technology Evaluation and Transfer (RERC-TET), international and national studies of significance are being developed. Major funding received from the National Institute for Disability and Rehabilitation Research, the U.S. Department of Education enables: longitudinal research; the development and facilitation of appropriately designed assistive technology for older adults; and facilitation of international technical support through education about assistive technology to third world countries. During the next three years, SUNY's RERC-Aging will extend an ongoing investigation, "Assistive Technology Device Use and Needs of Home Based Older Persons With Different Impairments." Early in 1994, they implemented a consumer hot line, PROJECT LINK. Queries about assistive technology are sought from elders, information about new products disseminated, and consumers with disabilities have the opportunity to introduce product ideas. This information is stored in the newly established national data base.
Another program, North Carolina's State University School of Design, Rehabilitation Engineering Research Center (RERC) on Accessible and Universal Design in Housing is developing educational programs and materials which will promote acceptance of accessible and universal technology for housing design and construction, and assistive technology products. For example, this RERC co-sponsors a national task force, which meets quarterly, bringing together 15 organizations on the National Task Force on Home Modification Policy. Their mission is to provide consumers and federal agencies information related to successful national educational efforts about assistive technology and home modification. Task Force members were instrumental in obtaining monies from the Retirement Research Foundation for architectural and occupational therapy researchers to develop an instructional video package, BETTER LIVING: Home Modification Adds Life to Years. Videotaped commentary by older consumers and accompanying materials will describe successful adaptations and demonstrate how assistive technology application facilitates more successful aging. The third funded program at the University of Southern California's Andrus Gerontology Center, established the first National Policy and Resource Center for Long Term Care and Housing. Research at this center is exploring third party reimbursement mechanisms which might assist in better meeting costs incurred for: home modification for lower income families; purchase of assistive technology products; provision of formal service delivery which might enable those elderly who suffer chronic health impairment to continue living in their own home.
Adult health educators eagerly anticipate the fourth White House Conference on Aging (WHCoA). The last one before the 21st century arrives, this official event will be held in Washington, DC, May 1–5, 1995. However, preparation has been underway since early 1994 and continues through April, 1995. Final recommendations will provide guidance to members of the US Congress in establishing and prioritizing aging policies for practice, education and research for the 21st century. Meeting notes from pre–WHCoA events reflected a heightened awareness among public health educators and gerontologists of the critical need to increase access to community health education programs for elders and their caregivers. Striking evidence of the need to increase access to these programs is the fact that a special subcommittee for the WHCoA in May, 1995 is already actively promoting integration of aging and disability communities, paving the way for integration in community education programs post–White House Conference on Aging. Clearly, the expectation is that in the decades ahead, assistive technology education for consumers will be in critical demand.

Personal communication with researchers in the European Union actively engaged in education and research for the Technology Initiative for the Disabled and the Elderly (TIDE) further supports the global need for consumer education. Selected research results were discussed at recent conferences in Tokyo, London and Orlando, Florida. Aging as a global phenomenon has assumed priority requiring immediate action in both developing and developed countries alike.

Health educators and researchers shared information about innovative programs that proactively respond to the recognized need for consumer education about ATDs for
the world's aging societies. Descriptions of program implementation that were directed
toward promoting technology use by the elderly and adoption of accessible and
universal housing design strategies as preventive health measures were emphasized.

In the Conference proceedings, "Potential of Information Technology for Solving
the Housing Problems of Aged People: International Workshop" (Kose, 1994) critical
issues were reviewed, new technologies proposed and education programming solutions
explored (Morris, 1994). In London, England, 2,000 practitioners and researchers
gathered at the meeting of the World Federation of Occupational Therapists. Adult
health educators compared strategies which had increased community access to
prevention and health promotion education about assistive technology (WFOT [3],
1994).

At the international conference, "PREVENTION: The key to health for life" in
Charleston, West Virginia, October, 1994, speakers focused attention on innovative
community education programs emphasizing prevention health care topics for
community populations. At the "World Conference on Independent Living" in Orlando,
Florida, adult health educators described proactive responses to global aging issues
which emphasized education programs promoting increased use of assistive technology.

Summary and Implications

The chapter offers an overview of relevant literature and cutting edge
information presented at recent conferences. The phenomenological approach used in
this study, proactively responds to multi-disciplinary research agendas discussed in the
literature review. These agendas emphasize the critical need for descriptions of
behavioral and social interventions that reduce excessive disability and provide chronic disease management strategies.

Phenomenological inquiry relies on the tradition of language and communication, where it reveals aspects of experience that might go unnoticed in adult learning situations. The outcome leads to increased understanding, which offers practical advice to inform decisions that ultimately can improve older adult health promotion and injury prevention education programs.

In the phenomenological process, a more comprehensive view emerges that takes the human experience of older women, 65–85 years of age and living alone as its starting place. Thoughtful attention to that conscious experience enhances understanding of how learning happens and what it means. Researcher reflection on descriptive dialogues facilitates grasp of inter-relationships, uncovering new understandings about how older women use learning as a strategy to better manage chronic disease. One recognizes more clearly and gains clarity about certain notions by moving them from background to foreground.

Keenly aware throughout the literature review of the paucity of research based information, I became cognizant of the critical need for gerontology to reflect a more human face. Phenomenological inquiry described in detail the process of adapting to loss through learning as a strategy that enhances independence and extends one's ability to continue living alone. Relying upon real world experiences, the co—researchers collaboratively engage in meaningful research that is grounded in the context of their daily encounters. Collaborative interpretation of dialogue clarifies the experience that
older women share learning to use assistive technology to compensate for physical or
cognitive limitations.

Selected recently funded studies emphasize the importance of participation by
older consumers in qualitative research as a way to gain critical perspective about the
importance of personal choice in the process of introducing and learning how to use
assistive technology. Data from presentations given at recent conferences, and review of
formal minutes from committee meetings as well as dialogue with researchers
contributing to advisory boards provided cutting edge information closely related and
supportive to the study.

The existing research profile appears limited and draws attention to the need for
expanding the consumer focus to include the rapidly escalating numbers of older women
and men. These older adults identify task performance limitations but do not yet view
themselves as disabled. Older adults may choose to pursue learning activities at home
as a way to modify demands from task performance and home environments that are too
challenging for changing physical, emotional and psychological abilities. It is clear that
data from this phenomenological study will fill gaps in the existing knowledge base,
enhance newly emerging studies and pave the way for future research studies. Increased
understanding about the management of chronic disease by older adults living alone
offers practical advice to inform critical decisions for improving older adult health
education.
CHAPTER III
METHODOLOGY

Introduction

In this section, an overview of phenomenological inquiry as a highly appropriate approach to this particular study is described. "The aim of the phenomenological approach is to describe experience as it is lived" (Oiler, 1982, p. 178). It includes a description of the meanings that specific experiences have for individuals who participate in them (Ornery, 1983). It was not the intent of this study to discover universal truths, or to make predictions that will hold true over time, but instead it was to explicate contexts for education for the growing number of older women. By using a phenomenological approach, the themes, processes and relationships of the experience of learning to use assistive technology at home were seen through the eyes of six older women, and led to new insights as well as new understandings.

Speaking at a national conference, Harry Moody (1991), emphasized the national need for continued research in adulthood and aging that would allow gerontology to reflect a more human face. Drawing attention to the need for using a phenomenological approach to aging studies, he metaphorically related this research process to a mirror. The co–researchers subjectively described to the researcher their image of an experience in its particular context. Joint interpretation further clarified the image of the experience, allowing both increased understanding of the experience and creating reflective knowledge.
Older women have interests, goals, aspirations, and daily routines that, when achieved, enable them to maintain self-esteem. Daily routines do not disappear with the onset of performance limitations. This study explored the interior of daily worlds for older women as learners through a phenomenological interpretation of dialogue about learning to use assistive technology as a strategy to meet changes, thereby taking this opportunity to explore subtleties and reflect upon daily human experiences of managing deficits. Hidden in these rich personal narratives, valuable insight for developing more meaningful health education interventions emerged.

The origins of phenomenology can be traced to Edmund Husserl and Martin Heidegger in Germany, Soren Kierkgaard in Denmark, and Jean-Paul Sartre and Maurice Merleau-Ponty in France in the early 1900s. Graphically, painting a picture using words, one might describe phenomenology (i.e., structured reflection) as an approach that directly explores experiences as they occur and are described by the individual engaging in the phenomenon. The descriptions were further studied through thoughtful exploration of the multiple identified components, as well as their interrelations. In phenomenology induction and deduction do not occur. The phenomenological method of data collection avoids the use of a priori standard definitions, but rather derives definitions directly from the data.

**Phenomenological Inquiry Design**

The phenomenological method that was used in this study is from the Utrecht School as taught and practiced by Martinus Langeveld in the Netherlands. The English text by Barritt, Beekman, Bleeker and Melderij (1983) served as a major reference, *The*
Handbook for Phenomenological Research in Education, is a translation of an earlier Dutch text (1977), Believing en Ervaring or Living Through Experience and Experiencing.

The aim of the method was to uncover the ground structures of a certain phenomenon through situational analysis. Little is known about the daily world of older women. What situations do they face, living alone despite functional limitations? In view of the current aging imperative, the need for better understanding of the meaning of the daily experiences of older women, facing multiple chronic health problems has assumed critical proportions. This phenomenological research concept allowed the inserting of older women's daily life-world experiences into a reflective dialogue, leading to the generation of a description of the experience of using assistive technology and home modification.

The Utrecht phenomenological approach involves the application of a four step method. In the first step the selection of six co-researchers was made according to specified criteria. The six co-researchers were asked to give a description of the experience being studied, independent of the other co-researchers, during personal interviews with me, and through learning diary entries. I generated a written transcript that was examined by the co-researcher for accuracy. This edited transcript was further examined by the researcher for identification of themes and or variations.

In the second step, I continued the in-depth examination of the multiple transcripts, identifying and listing important elements/themes in the co-researchers' own language. Grouping these element statements allowed me to gain a clearer perspective
of each individual experience. During the thematic analysis I employed bracketing, or suspending any recognized preconceptions or biases. Responding to the basic requirement for the phenomenological method, I looked at the phenomenon as if for the very first time and in a completely open manner, thereby allowing the experience to speak for itself. For ease in management of the multiple common themes, element statements and variations generated during this step in the process, tables were utilized to facilitate writing of the individual description.

In the third step of this process, each of the six co-researchers received her individual description for examination to assure that the intended meaning was captured by me (see Letter Accompanying Individual Description, Appendix C, pg. 182). The co-researchers were encouraged to make suggestions where changes should appear but I reserved the right not to change based on my particular insights. However, if disagreement did occur it was mentioned in the research report. Each description was written in the co-researcher's own language reflecting my intent to capture the essence of the older woman's unique experience of learning to use assistive technology at home.

In the fourth step, I thoughtfully examined each of the six individual descriptions in order to develop and write the fundamental description that is based on all the identified themes. That comprehensive statement was a composite, which included the common themes from each of the six descriptions and the individual learning diaries. Those variations that were identified were carefully woven into the body of the fundamental description. As a reflection of the importance of each co-researcher's understanding of her learning experience and its unique contribution to the fundamental
description, the final composite statement continued to be written in the language of the co-researchers. Validation by and comments from the six co-researchers were again sought, as they examined the statement for accuracy of their contribution (see Letter Accompanying Fundamental Description, Appendix D, pg. 183). In addition this opportunity allowed each co-researcher to affirm exactly where she rested in the fundamental structure of this experience. Once again, comments were noted but I retained final decision about insight within this fundamental description. Careful review of these four steps was useful to establish a groundwork for a more comprehensive understanding of the phenomenological approach to be used in this inquiry. Although one alteration was made, allowing that interviews be tape recorded as one step in the process of developing individual descriptions. A second alteration was offered should co-researchers prefer tape recording learning diary entries at home instead of handwriting the entries (see Phenomenological Process Outline, Appendix B, pg. 181); co-researchers preferred to make handwritten diary entries.

Selection of Co-Researchers

In phenomenological research there are no subjects or informants. Instead, the appropriate role category is that of "co-researcher." The method in phenomenological research involves "co-researchers" who "see" and "reflect upon" the identified experience. At the beginning of this study, staff at Howard County Office on Aging/Adult Community Evaluation Services (HCOA/ACES) and at the Fairfax County Senior Housing complex, Burke Gardens, were asked to suggest older women who
might be willing to serve as co-researchers in this research. Participant registration lists from the various Office on Aging and Lake Garden Apartment workshops, where the strategy of using assistive technology was introduced, were reviewed. Announcements were made at these workshops, briefly describing the research project and seeking volunteers, or peer suggestions, of adults who might be interested. For the purposes of this study the criteria for co-researchers was that the older women: (a) be between 65–85 years of age, (b) live alone, (c) experience functional limitations in task performance, (d) have participated in the introductory assistive technology workshop, and (e) be willing to commit the required amount of interview, tape recording and phone conversation time to serve as a co-researcher for this study.

After receiving staff and or peer recommendations, each prospective co-researcher was called and told about the study. It was explained that the study was a doctoral dissertation aimed at understanding the meaning of the experience of learning to use assistive technology at home. The time commitment specified included three one-hour audiotaped interviews and completion of seven days of randomly handwritten commentaries by the co-researcher.

**Role of the Co-Researcher**

The co-researcher role was characterized by performance of two very specific tasks. The older women, who have experienced the phenomena being studied, were invited to provide the data or describe the experience (i.e., a descriptive statement) for transcription and interpretation by the researcher. A second and pivotal co-researcher's role was to validate the researcher's interpretation of her description, by examining the
transcription written by the researcher. Upon completion of this validation process, the researcher generated the written statement (i.e., the individual description). Following development of the six co-researcher individual descriptions, I generated a summary statement (i.e., the fundamental description) in which I compared and contrasted the individual descriptions earlier generated by each co-researcher. Once again each of the co-researchers validated this description, paying attention to aspects related to her description.

Data Collection Procedures

My data collection technique included taping three, one-hour long interviews with each co-researcher. Handwritten logs, random commentaries handwritten at home throughout each day about the learning experience, were made by the co-researchers during a scheduled 1-week period. Prearranged consent for this taping was made according to written agreement (see Letter of Consent, Appendix A, pg. 180). The development of rapport with the older adult was well established at the outset. It was important that the older woman felt comfortable describing her experience of learning to use assistive technology. Through elimination of the co-researcher's concern about writing clearly or using correct grammar, I found it easier to clarify what she wished to know, to explain why it was important, and to describe how the information would be used.

Transcripts of all tape recorded material were mailed to the co-researchers following interview sessions and review of handwritten diaries, in order that transcript reviews could be completed in a timely fashion by the co-researcher. Self-addressed,
stamped envelopes provided ease in return mailing. The co–researcher's agreement to participate in the study included scheduling interviews in writing. I verified interview times by phone on the scheduled day to accommodate any last minute schedule conflicts by the older adult.

Although not part of the original data collection and research methodology, an unexpected opportunity arose during data collection sessions for me to interact with family caregivers. During these brief, informal conversations with family members, consistent reference was made to the impact that they had noticed on task performance following at home learning experiences by the co–researchers. These comments were significant and have been included in the results because they had direct relevance to the primary focus of this study, enhanced understanding the daily, lived world learning experiences of six older women.

**Location of the Interview**

Co–researchers may sometimes experience difficulties with transportation arrangements. Therefore, I decided to conduct interviews within the senior center and/or home setting of the co–researchers. I felt the familiarity of the location would facilitate the process of describing the meaning of the experience of using assistive technology.

**Focus of the Interview and Handwritten Diary Entries**

Co–researchers participated in a pre–scheduled interview with me. During that hour long conversation the co–researchers were encouraged to describe in detail the last time that they had used assistive technology products/devices to perform daily routines.
They were asked to describe what happened and how they felt, and asked to continue telling about the experience until they feel that it has been described fully. They were asked the question, what is the meaning of the experience of learning to use assistive technology at home to modify demands of task performance and the home environment.

The topic of assistive technology had been explored by the co–researchers earlier at the peer workshop session where various kinds of assistive technology were introduced, and practical application of the device(s) selected for home trial. The workshop discussions included open ended questions about frequency of technology use in their own home (i.e., TV, VCR, telephones, tape recorders, cameras, typewriter, word processor, etc.). At the close of each interview session, a careful review of the remaining sequence of steps was offered and a reminder of the scheduled date for the next interview.

**Data Interpretation**

Following tape or written recording of the conscious experience of using assistive technology at home, I transcribed the interview for subsequent interpretation. Preliminary editing occurred when the transcript was first summarized in writing. This editing included eliminating repetitive phrases and or shortening of lengthy sentences as the first step. Upon condensing, and creating the edited transcript, I reflected upon the description in order to identify themes. Interpretation in this phenomenological approach led to new insights about the meanings of the experience of using assistive technology for modifying task and home environment demands. The expected outcome was to develop an individual description of the experience. Subsequent reflection by me
on each of the co–researcher's individual descriptions led to the development of a
fundamental or exhaustive description of this experience.

**Development of Theme Description**

The list of elements in each transcription was carefully noted and written down
from that description. Rereading the condensed format was absolutely necessary, as was
constantly returning to the original transcript to assure no important statements were
omitted. As I completed the list of themes, it was important to scrutinize—slowly
reviewing each statement thoughtfully, in order to recognize emerging commonalities.
Variations in themes were discovered and noted. Phenomenological reduction, or
consciously holding in abeyance personal beliefs about the everyday world, is an
integral component of this process.

**Development of Individual Description and Validation**

These themes, or common elements, were particularly important in creating the
individual descriptive statement of the experience for reflection and validation by the
co–researcher. Factors that were integral components of this particular experience
clearly emerged. This written description was mailed to the co–researcher for further,
thoughtful reflection and determination of its accuracy. A follow–up interview was
made by phone to get first hand response to the transcript and to remind co–researchers
that they would receive a revised copy, incorporating selected suggestions, in order that
they could keep an individual description of their experience.
Development of Fundamental Description and Validation

Reflection upon the five individual descriptions following the phone interview allowed the opportunity to relive and reflect upon each of the individual, co-researchers experiences. I expected that there would be certain emerging commonalities and obviously marked distinctions, as well, among the individual descriptions. I felt confident that would facilitate the development of the fundamental description. Upon completion of the fundamental description in written format, copies were mailed to each co-researcher for thoughtful reflection. The third and final pre-scheduled interview allowed time for comments from the co-researchers and discussion of the comprehensive research experience.
CHAPTER IV
RESULTS OF THE STUDY

Introduction

This chapter provides narrative that will facilitate understanding of the qualitative phenomenological research approach through reflective review of descriptions about the experience of older women learning to use assistive technology products at home. The co-researchers' protocols, validated individually, are included in the Appendix for the readers' further reference (see Appendix E). Application of the phenomenological approach offered repeated opportunities for in-depth reflection throughout the course of this comprehensive research process. To enhance readability, transition has been made to the first person in individual descriptions. Protocol statements served as the primary foundation upon which the individual descriptions were developed. During a second wave of reflection, statements from individual descriptions created a second layer on the foundation from which the fundamental description emerged. The final outcome was the fundamental description validated by each co-researcher.

Common themes noted in the co-researcher's protocols that are described in this chapter include: (a) learning as a strategy for chronic disease management; (b) motivation for learning of an instrumental and expressive nature, as viewed from short- and long-term applications; (c) maintaining sufficient energies enabling continued community social role involvement; (d) recognition of the ongoing need for increased access to assistive technology education; and (e) recognition of the need for learning
reinforcement through peer instruction. The co–researchers' acceptance of interdependence as a "real world" accommodation that extended their abilities to live alone, seemed a particularly difficult health behavior change for the co–researchers.

This phenomenological inquiry "opened the door" on the daily world of the co–researchers by increasing our understanding of their learning experiences. Daily existence, described in considerable detail in protocols (see Appendix E), reflected struggles with routine chores at home as the women sought to maintain social roles which continued to give them a reason for being. Through perusal of the co–researchers' dialogue, I could better grasp what it meant for these women to wrestle daily with physical and/or cognitive losses, as they inched forward along their chosen pathways into their later years. Review of descriptions about struggles to enhance abilities and maintain social roles, it is possible to share real world situations through interpretations of these existential meanings.

The co–researchers described learning as the strategy that they have used throughout their adult years for adjusting to change. In their later years, learning is viewed as an option facilitating better management of increasing limitations from their respective chronic diseases. Through situational learning they sought to learn new solutions which might help them overcome daily barriers met with declining abilities for task performance required by those living alone. Valuing continued community involvement, co–researchers sought contribution which was of a reciprocal nature, such as giving informal support to friends more limited than they.
Clearly, these issues of significance, drawn directly from the co-researchers' dialogue and learning diaries, contributed to the universality of the co-researchers' late-life learning experiences. Learning had long been viewed by these women as a strategy for adjusting to life's changes. It seems natural that they would view learning as a way to manage chronic disease. This learning was strongly reinforced with home trial of assistive technology products, as well as peer demonstration opportunities at the Senior Center and Senior Apartment. Their willingness to accept a partial reliance on social support networks facilitated renewed participation in valued social roles. They repeatedly emphasized the need for increased access to assistive technology education for all older adults.

Learning Used as a Strategy for Chronic Disease Management

The older women in this study indicated that learning enabled them to create and regain a sense of control needed to manage chronic disease as they struggle daily with concomitant functional limitations in major areas of activity performance. The co-researchers defined learning broadly, including learning in both the formal and informal context. Institutionally sponsored learning took place within small group settings, either at the local community center or apartment housing complex. Self-directed learning occurred as an integral component of small group experiences, as well as through participation in the home-study practicum. The co-researchers described these combined learning techniques as successful because through "hands-on" learning
opportunities, skill development was enhanced in the use of assistive technology products.

Matching physical need with cognitive need guided the choice of appropriate assistive technology products. Small group discussions and demonstrations emphasized the appropriate use of selected technology products. The co–researchers entered results of product trials in learning diary entries at home, thereby, reinforcing personal understanding of the product's use and how it might compensate for individual limitations. Each co–researcher found specific design problems which they expect to share with product manufacturer via letter. The co–researchers indicated that answers to the following questions were useful as they explored the best way to use the assistive technology (AT) products at home during personal care and home management routines. How often do I use this AT product to complete the task? Did the AT make it less painful for me to do the task? How did the tool feel inside my hand: too heavy, too hard, or too soft? How much energy does it take to do the activity with the AT product? Do extra energies become available for other tasks because I used less energy with the AT product? Is it more safe doing the task with the AT product? Do I feel dignified using the AT product at home or at the Senior Center? Does using the product make me feel less dependent on others? If I find the product does not meet my needs, how could I redesign it in order that it better meet my needs?

Guided by "how" questions, the co–researcher described personal meanings related to individual learning during daily management of activity limitations arising from their respective physical and cognitive changes. Realizing the actual conditions,
reasons, meanings and motives behind the co–researchers learning activities increased the primary researcher's understanding of their respective descriptions. Co–researcher learning diary entries and interview transcripts were carefully reviewed and reflected upon during subsequent development of the individual and fundamental descriptions.

Determination and verbal appraisal of appropriateness for use in the co–researchers' home situation was individually determined and shared with peers in the series of return demonstration sessions. Community center group members raised helpful questions reflecting strong interest. Their positive responses created a supportive educational setting which further reinforced peer learning. The co–researchers reported a strong feeling of empowerment as a favorable outcome of this learning and teaching experience. Peer learners expressed an interest in extending the influence of this information by sharing it with a wider audience. The co–researchers planned to attend other Senior Center meetings to demonstrate AT products. Some decided to reach out to the larger older adult community through an article in the local Senior Newsletter.

Careful reflection upon the needs and goals stated by, or inferred from the co–researchers' stories, enabled me to grasp meanings attached to respective learning experiences. Managing basic survival needs and maintaining a sense of task performance effectiveness appears responsive to individual instrumental learning needs (see Table 1, page 74). In addition, needs and goals relative to identity, affiliation, competence, and involvement in productive activities were responsive to expressive learning needs.
Changes in physical abilities and cognitive status identified by the six co-researchers included: (a) limitations of stamina; (b) difficulty interpreting information; (c) impaired vision or hearing; (d) prevalence of poor balance; (e) difficulty moving head, reaching with arms, handling and fingering; (f) loss of some upper extremity skills; (g) difficulty bending; (h) difficulty kneeling; (i) reliance on walking aids; (j) inability to use lower extremities; and, (k) extremes of body size and weight.

Preservation of psychological and physical health and maintenance of satisfactory social adjustments were described as critical components of daily management.

Selected statements from the six co-researchers' protocols have been tabulated and included in this section to facilitate comparison (see Tables 1–5) and to allow recognition of similarities. Not one of these women recognized that demands from within the built environment of their home setting, or tools regularly chosen to complete daily activities, limited their ability to successfully achieve routine daily tasks. In each case they were completely unaware that assistive products (i.e., special tools) were available through mail order catalog purchasing. Indeed even with this awareness, the women indicated they rarely shopped through catalog purchase because their learning preference involved hands-on product trial before purchase. Product exchange through the mail was costly to them in terms of energies expended (see Table 2, page 76).

Preferred learning strategies with chosen assistive technology products included: (a) group demonstration of appropriate use, (b) personal trial at home which assured them an understanding of product use as well as appropriateness in their home situation, and (c) an opportunity to demonstrate the product to their peers in a supportive setting.
Table 1. Motivation for Instrumental Learning

Selected Co-Researcher Statements

It's hard for me to understand written or verbal directions. (Betty)

As a result of my diabetic condition I must use daily insulin and need to learn how to modify my diet. (Dorothy)

The joint pain which I feel on some days in my hips, shoulders, wrists and hands is devastating. I am completely immobilized. (Eloise)

I simply cannot reach over my shoulder with my left arm since my mastectomy. (Agnes)

I realize I have major vision and increasing sensation loss because of my diabetes. (Catherine)

Moving around is much slower for me and I get tired easily because lifting the short leg brace each step I take with my right leg takes much more energy. (Hilda)

I have arthritis in the joints of my hands, shoulder, knees, hips and ankles. (Betty)

Initial sensory loss in my feet require that I master skin care of both feet immediately to avoid future infections. Due to my obesity I can not reach my feet to give them the extra attention they need. (Dorothy)

Each day the activity I'm able to do depends on the amount of pain I'm experiencing because of my arthritis. (Eloise)

Just getting my coat on can take fifteen or twenty minutes. (Agnes)

Bathing is slower for me. My weak ankle means I must sit down on the tub bench to safely complete my bath or shower. (Hilda)

I have marked vision and mild hearing losses which effect [sic] mobility at home and also in the community at locations outside my home. (Betty)

I am overweight and also have diabetes. My dietary compliance is the major health challenge for me. (Dorothy)

I have very poor standing balance. I get dizzy moving from stand to sit position. That effects [sic] sitting in a chair, on the toilet, the bath and the bed. (Betty)

Getting breakfast takes me much longer because I can't reach up to retrieve items from up high or bend down to low shelves. (Agnes)

Bathing in the bathtub or shower was impossible after my mastectomy. The nurse introduced me to assistive products (i.e., a bench, hand held shower, and extended handle bath sponge). (Agnes)

It takes all available energy to walk over to the Center. (Agnes)
Table 1. Motivation for Instrumental Learning (Continued)

Selected Protocol Statements

In my house, I focused on learning how to live on the first floor so I can move safely about in kitchen, living room, bed & bathroom, and garden. (Betty)

Certainly learning the latest information about managing my chronic diabetes condition continues to be my highest priority. I want to continue living alone. (Dorothy)

I'm learning to slow down and enjoy life one day at a time. . . . If it weren't for my family I might not be here today. (Agnes)

Survival mode is where I often find myself. This motivates me to continue the daily struggle to master new strategies which allow me to continue living alone in my apartment. (Eloise)

I've been able to keep up with regular participation in different adult learning groups. Getting out each day helps me to keep my problems from weighing me down. (Catherine)

I regularly go to the Health Education Class...I've long felt that I need to know all the latest information possible so I can be sure I'm managing my chronic mobility limitation the best way I can. (Hilda)

I want to learn new strategies to help the "new changing me" to get through each day. (Betty)

My decision to serve as facilitator for the Diabetes Support Group makes me feel useful again. I'm motivated for ongoing learning and I am able to share this personal focus on learning with my peers. (Dorothy)

The reason the Arthritis Support Group is so important to me is that I'm able to learn new strategies which help me manage my chronic arthritis. (Eloise)

I was motivated to learn how to use the item when it appears usable despite my physical and memory limitations. It might allow easier task completion or I might find it possible to do some tasks I now avoid doing. (Betty)

Another motivating force for me in task focused learning is if it enables me to extend application of earlier career skills. (Dorothy)

Local speakers come to our group provide video instruction as well as handouts to take home review at a later time. (Eloise)

Bathing with a weak ankle required that I learn to sit down on a bench because without my brace I can't stand that long. (Hilda)

I can't read my personal mail or write checks. The public occupational therapist taught me how to use various magnifying products and a check writing guide. I asked her to teach me how to adapt the stove and toaster dials so I could read them better. (Catherine)

I intend to stay independent and live alone so I must adapt and learn new ways of living. For example, I've learned to do home exercise for my shoulder after the mastectomy, daily insulin injections, take a shower using a different technique and with assistive products, and manage a more appropriate diabetic diet regime. (Agnes)
Maintaining Energies for Social Role Participation

Co–researchers identified a strong preference for learning activities that introduced new information that might extend limited in–home abilities. Eager to continue social roles in their family and communities, they hoped to have sufficient physical energies remaining to continue participating in community activities to increase social interaction. This preference seemed to strengthen personal motivation for learning survival strategies. In effect it encouraged them to try new tools expecting that they might reduce energy expenditure in personal care tasks.

In a small group discussion, the co–researchers identified factors required to successfully live alone. Effective and proactive strategies were needed to: (a) enhance safety and security, (b) sustain independence, (c) assure privacy, and (d) facilitate activity performance at home, out–of–doors, at the senior center, shopping mall or doctors office. Activities that encourage independence, sustain and promote social interaction, provide exercise, increase mobility, increase convenience, and increase ease of maintenance of the home and yard are of importance to the co–researchers.

The co–researchers described specific limitations in self–care performance (i.e., bathing, grooming, dressing, eating, toileting, and mobility within the house, yard and in community locales). In some cases, co–researchers eliminated home management tasks that became too difficult or else asked for help from family members. Prior to the Senior Center and the Senior Housing education sessions about assistive technology, one co–researcher had been introduced to personal care products through her physician's
nurse. Family members repeatedly engaged her in home practice sessions until she became comfortable using the products.

The co–researchers stated that there was a critical need for focused training in the use of AT products. The option of borrowing products for trial and extended at–home practice increased their feelings of confidence in preparing to demonstrate product use to peers. They indicated that multi–step home management tasks often required assistance from their informal support network, or in some cases, provisions from a formal service delivery network. Dependence within home management seemed to be more easily accepted than was the case with personal self–care. In order to continue receiving family support, parents chose to relocate because they relied on care given by the adult child.

As personal abilities declined, reliance on a strong informal support network of family members and friends increased. As key individuals, family caregivers enabled these women to rebuild daily routines during which they participated as they were capable each day. Particularly significant to the women was their ability to resume social role functions of a reciprocal nature, allowing them to contribute to others' well being, and/or resume aspects of personal care. Co–researchers, as active adult learners, contributed to their communities through engagements as learning group facilitators, students in public education classes, or through sharing information with peers within their daily worlds. Assistance from others began in the area of home management and progressed to personal care.
Motivation for Expressive Learning

The co-researchers described participation in various social roles as critically influential on their self-esteem. Among roles identified were: (a) child, (b) sibling, (c) friend, (d) student, (e) employee, (f) parent, and (g) grandparent. Despite coping with increased dependencies in self-care and home management, the co-researchers recognized a critical need to participate in valued social roles.

Relocation was chosen because it would allow more frequent and closer contact by the adult child able to provide care at the time it was needed by the parent. Learning about assistive technology was viewed as a means to reduce task demands or to hold promise for reduced reliance on family and friends. In addition, co-researchers found that opportunity to share this AT learning with peers and family facilitated resumption of preferred social roles—such as being a student or being a teacher.

The co-researchers described motivation for expressive learning (see Table 2, pg. 76). Their assistive technology learning experiences were empowering (see Table 3, pg. 79) and information gained had both immediate value and long-term value. Options were now within reach as part of their coping repertoire should their personal, physical and/or cognitive needs change. When interacting with peers through participatory learning, co-researchers gained respect from friends through real world demonstration that learning enables individuals to adjust to change.
Table 2. Motivation for Expressive Learning

Selected Co-Researcher Statements

There are various social roles from which I derive a strong sense of who I am. They are: being a mother, grandmother, friend, teacher and student. (Betty)

I worked for 30 years as an office manager. My self-esteem is stronger because I've found a place to use previous career skills in retirement. (Dorothy)

I've always gone to church every day. It continues to be important to me so I attend a weekly Bible study group. (Catherine)

During the day when my family is away, I keep in touch with my friends by phone. (Eloise)

My family agreed that they too wanted me to try living on my own once again. (Agnes)

My daughter or another member of my family, speaks with me daily by phone. (Betty).

The Diabetes Support Group meets twice a month. I'm generally over there a few hours each day preparing for meetings. (Dorothy)

My family takes me out once each weekend. We visit over lunch or dinner at a restaurant. (Catherine)

And even though my family is called upon so frequently . . . they thoroughly understand how much I treasure my freedom. (Eloise)

In my house, I focused limited energies on learning how to restrict my daily world to the first floor so I can move safely about in kitchen, living room, bed and bathroom, and garden. (Betty)

Certainly learning the latest information about managing my chronic diabetes condition continues to be my highest priority. I want to continue living alone. (Dorothy)

I'm learning to slow down and enjoy life one day at a time....If it weren't for my family I might not be here today. (Agnes)

I benefit most by keeping in touch by phone. (Eloise)

I've been able to keep up with regular participation in different adult learning groups. Getting out each day helps me to keep my problems from weighing me down. (Catherine)

I always go to the apartment's Health Education Class. I must know all the latest information possible so I can manage my mobility limitation in the best way. (Hilda)
I want to learn new strategies to help the "new changing me" to get through each day. (Betty)

My decision to serve as facilitator for the Diabetes Support Group makes me feel useful again. I'm motivated for ongoing learning and I enabled to share this personal focus on learning with my peers. (Dorothy)

The reason the Arthritis Support Group is so important to me is that I'm able to learn new strategies which help me manage my chronic arthritis. (Eloise)

Another motivating force for me in task-focused learning is if it enables me to extend application of earlier career skills. (Dorothy)

In the area of home management, I don't do much these days. I guess the clutter on surfaces would be the first thing a visitor would notice. (Betty)

At the condo, the staff are eager to help me with yard work, heavy housecleaning, and unloading groceries. (Dorothy)

Getting over to the supermarket, cleaners and/or beauty shop takes all my available energy. (Agnes)

Some mornings I barely move out of my bedroom, the pain is so great. (Eloise)

My granddaughter helps me on weekends with vacuuming, house cleaning and baking. (Hilda)

I have major vision limitations . . . so I need help with home management, i.e., cleaning, cooking, shopping, financial management, etc. (Catherine)

To do my grocery shopping, I need help with reaching products on high/low shelves. (Agnes)

My daughter . . . speaks with me daily by phone. (Betty)
Access to Assistive Technology Education

The co-researchers experiencing chronic health problems demonstrated strong interest in AT learning as a strategy for negotiating their aging process despite the limitations experienced daily in activity performance. Description indicated a self-directed readiness for learning developed in the later years following struggles to cope with life tasks and problems. Formal learning (i.e., senior center and senior housing sponsored) within small group settings emphasized physical comfort, mutual helpfulness and respect, trust, informality, and encouraged freedom of expression. Personal learning opportunities to experience the impact of home modification and assistive technology supported autonomy and responded to their expressed preference to continue living alone. Immediate application of newly learned information structured their learning in a way that enhanced its usefulness.

Older women described a rich personal history of early learning experiences and recognized value in learning from others' experiences as well as practical trials on their own. Access to technology education for older adults is not generally available. Following exposure to AT, co-researchers' immediately realized the value and cited the need for increasing access (see Table 3, page 79). Within the United States, assistive technology distribution systems reach extremely limited audiences. Typically, only those treated in the acute care hospital, rehabilitation center and home health agencies, are taught how to use AT products).
Table 3. Access to Assistive Technology Education

Selected Co-Research Statements

Every weekend my children and grandchildren practice to be sure I remember how to use the cordless phone. Thank goodness they’re such patient teachers. (Agnes)

Nowadays the greatest pleasure I get is providing consistent leadership for the Senior Center Newcomer Support Group. The members want to learn new strategies for more successful aging. (Betty)

The group members told me they benefitted from the occupational therapy student presentations about assistive technology and the opportunity to borrow products to learn about at home. (Dorothy)

I attend all the public health education classes. I learn best in small group settings. Others’ questions increase my learning. (Catherine)

The discussion at the Support Group about how older adults can better maintain independence certainly seemed to interest the whole group. (Betty)

Suggestions we could reduce daily activities' demands which currently exceed personal abilities was information none of us had ever heard before. We can share it with friends and our families. (Betty)

In the Diabetes Support Group at the Senior Center, I have a close circle of friends. We help each other stay on our diabetic diets and share tips about assistive technology. (Dorothy)

I regularly go to the public health education classes which are taught by the occupational therapist and the nurse . . . Information about assistive technology learned there provided me with survival skills which enable me to continue living alone. (Hilda)

I’m really lucky the Center is so close . . . For example learning about these new assistive technology products . . . if I get worse I’ll know what’s available . . . I’ve already shared that information with friends. (Agnes)

I sit near friends at apartment meetings in case I need help reading something to do with rules and regulations for residents. (Catherine)

I’ve learned that my shopping cart is indispensable and can load it up with groceries and/or laundry and manage by myself. (Hilda)

I really hoped to find a young woman with whom I could share my house. I’d like to have more companionship at home and I recognize my need for consistent help with certain home chores. (Betty)
Table 3. Access to Assistive Technology Education (Continued)

It was so exciting for my daughter and me when she found this condominium. She's a realtor . . . She understood exactly what kind of home setting I needed. (Dorothy)

My grandchildren help me on days when the joint pain is too bad for me to move. On other days, assistive technology products help me. (Eloise)

My son lives nearby and makes sure I get to any medical appointment I might have. He picked up the commode chair from the local health department loan closet. (Hilda)

I'm generally over at the Senior Center daily. (Dorothy)

It's critically important that I get to the Arthritis Support Group meetings . . . being with my friends gives me a psychological boost which lasts for days. That's where we discuss the various assistive technology products. (Eloise)

My grandchildren visit me on weekends and help do the chores from the week before that never got finished. They enjoy teaching me about new assistive technology products. (Agnes)

My friends at church volunteer to drive me to appointments which happen when the apartment van may not be scheduled. (Catherine)
Learning Reinforcement Vital for Adult Learning

The co-researchers indicate that following introduction to assistive technology products and services, enhancement of personal learning was increased through preparation for peer demonstration of assistive products. In most cases, co-researchers chose to demonstrate (see Table 4, page 82) to friends within their circle of community center acquaintances. They stated that it increased their sense of self-worth being able to give information otherwise unavailable. Demonstration of AT to family members was also valued. Over the long term, encouragement from these family members facilitates continued use of AT and promotes independence.

Informal Network Support

Dealing realistically with various types of chronic disease, co-researchers recognized that informal network support with increased personal dependencies are to be expected. Introducing assistive technology (see Table 5, page 86) to family members paves the way for sustained acceptance of services and enhances continued availability of these necessary products. This allows primary and secondary users to experience first hand the person-object interface, exploring alternatives within specific household constraints. Co-researchers determined the why, when and under what specific circumstances various products were particularly useful. The attitudes of peers and family were often a critical key to sustained product use.
Table 4. Adult Learning Reinforcement Options

Selected Co-Researcher Statements

My kids want me to be a safe and comfortable so they’re always suggesting some new products. They feel it's urgent for me to show them how I'm using it. (Agnes)

The children and grandchildren began suggesting and introducing new products which they felt might be energy saving after I got home from cardiac surgery. (Betty)

The nurse at the doctor's office taught me how to do my insulin injections. She had me return her demonstration each time I went for an appointment for four weeks straight. (Dorothy)

Recently we had an occupational therapist speaker from the Arthritis Association. She showed us a video about reducing stress on hand and shoulder joints. Later all of us in the Support Group tried out the examples we'd seen her do. We were glad she gave us a pictorial brochure to take home which reviewed the exercises. (Eloise)

I asked my friends whether they thought using a commode in my bedroom was a good solution for the night time urgency and frequency I have. The occupational therapist showed me how it could work in my apartment. I borrowed it for one week and found out it helped me. (Hilda)

I am pleased to share new diabetic recipes for my friends at the apartment's pot luck luncheons. We talk about other solutions to coping with and managing diabetes better. (Catherine)

I regained a sense of power when I was able to share the assistive technology information with my friends who never knew any such product even existed. I showed them how I'd used my extended handle bath brush. (Dorothy)

My family was really surprised when I introduced them to these items which they never saw at the local shopping mall. They realized the reacher was safer for me to use than the step stool in my crowded kitchen. (Betty)
Table 5. Informal Network Support

Selected Protocol Statements

Lately, I find myself considering a move to a Continuing Care Community (Betty).

I know myself . . . if I decide to move it must be while I still have sufficient energy to make new friends (Betty).

I'm generally over at the Senior Center a few hours each day. My circle of friends regularly enjoy eating at local restaurants We're all in the same group at the Center. Each of us is trying to help one another learn how to order better diabetic food choices while we socialize at the restaurant (Dorothy).

I frequently pick up my friends who aren't able to drive anymore (Dorothy).

The Condo staff are available to help me with outside or inside tasks (Dorothy).

The opportunity to meet with my peers in the Diabetes Support Group who experience the same disease I have is very comforting (Dorothy).

My daughter helped me find this new condominium (Dorothy).

My son and his family helped me to locate this convenient apartment (Agnes).

Each member of my family was worried and so was I. I keep reminding myself how lucky I am to have a family who really cares about me and looks after me so consistently (Agnes).

My friends in the Diabetes Support Group are really important contacts for me (Agnes).

I value my caring family and friends more than ever before. I've learned the importance of developing new friends (Agnes).

One of my friends at the Center has had a stroke....she showed me a new way to put on my coat (Agnes).

Accepting help from my friends was an important behavior for me to learn to accept (Catherine).

My vision loss could be much more confining but I'm now comfortable asking anyone who may be visiting my apartment to read my personal mail or to write personal checks for me (Catherine).
Table 5. Informal Network Support (continued)

Getting out each day to church and other social events help me to keep my problems from weighing me down (Catherine).

I look forward to sharing new diabetic recipes I've tried at home when I attend the apartment's monthly healthful pot luck luncheon (Catherine).

Soon after I turned seventy I recognized how completely dependent I'd become on my son and family. I regularly tell them how much their help means to me (Catherine).

When my son's company transferred him to Virginia he and his family asked me to move in with them (Hilda).

The director, staff and participants at Senior Center in Texas where I used to work before we moved away hold a very important place in my memories (Hilda).

When I first moved in my neighbors welcomed me so I felt right at home (Hilda).
Common Themes in Individual Descriptions

Following repeated readings of the co–researchers' validated protocols, I began to arrange specific elements by assigning labels for common themes according to the order in which each had described her experiences. I found the following themes to be common among the six protocols. Clarification was offered of the impact that various physical and cognitive limitations have had on decreased task performance abilities. Little motivation was noted for participation in learning experiences unless there was direct linkage to the reduction of excess demands found within the home.

Strong motivation was described by co–researchers for instrumental learning, or introduction to "survival and coping" strategies that were seen to support self–directedness enabling them to continue to live alone. This learning related primarily to activity resources of health, finances, and social support. Expressive or learning of particular interest related primarily to needs associated with identity, competence, meaningful and purposeful activity, and affiliation. The degree to which both of these learning needs were met clearly affected self–concept. The acceptance of "achievable" personal independence was directly related to strong informal supports such as family and/or friends.

The co–researcher descriptions characterized the process of managing chronic disease as demanding constant re–adaptation, thereby creating a disorienting dilemma. Statements reflected practice of health behaviors that sought to improve problem solving skills in order to better cope with the "unexpected." An often stated concern was their need to sustain autonomy, and to address personal well–being or quality of life. Noting
an absence of role models who demonstrated strategies that promoted healthful aging, the co-researchers recommended they held unfounded expectations and attributed them to their lack of opportunity to discuss and explore aging experiences with friends. However, once the co-researchers were introduced to using AT as a strategy, they recognized that they could have benefitted had they known this information much earlier. They wondered aloud how to increase access to similar adult learning experiences that promote collaborative exploration of solutions for day to day problems for other aging persons. It was felt that learning strategies directed attention toward problem solving and encouraged optimal application of their remaining abilities. Reinforcement of new learning was felt to be most successful through sharing that new learning with friends. Recognition was also made of the fact that personal or self-directed learning had long been part of co-researcher lifestyle.

**Protocol Development**

The co-researchers' experience of learning to use assistive technology yielded a wide range of detailed commentary from the co-researchers. Captured during taped interviews, the statements were subsequently transcribed into lengthy protocols (see Appendix E). Upon reflection and thoughtful review of the transcripts, I felt well grounded and comfortable that I had gained an in-depth understanding of the meaning laden, co-researchers' statements.

A second format, daily written diaries or learning logs were repeatedly reviewed and reflected upon by the primary researcher. The diaries furnished a rich personal
description of the lived-world, practical application of products by the co-researchers during their process of learning to use various AT products to perform daily tasks at home. Diary entries were another form of inquiry which facilitated in depth exploration of the inner experiences of six older women. The process of learning to use technology, generally unproved in everyday life, was described with attention to minute details. Questions for which these women sought answers focused attention on perceptions of personal safety, utility, effectiveness, time-consciousness and independence for persons of differing abilities. Effort was made to trace the conscious experience of learning to use individually selected AT by these older women with physical and cognitive limitations as a result of their various chronic diseases.

Written diaries, in which co-researchers furnished descriptions of learning experiences using self-selected AT products, were carefully reviewed in preparation for the individual descriptions. They were reviewed again when preparing for the fundamental description. Six co-researchers selected these products: (a) two magnifying lens (one with a light and one without a light), (b) a modified appliance knob gripping handle with an L-shaped grasp, (c) a vegetable peeler with a contoured handle, (d) four types of extended reachers, (e) an intermediate height self spacer, and (f) a knobbed door handle grip. Five co-researchers were interested in learning about a bottle lid grip with a "T"-shaped handle. Four co-researchers learned about a playing card holder, and a long-handled bath brush. Three explored the usefulness of a plate with raised rim, a sock/stocking aid, and a removable plate rim. Two co-researchers mastered the
use of a jar lid grip. One researcher selected a palm grip staple remover. Another
selected a folding dressing stick.

Following review of the fifth and sixth co-researcher protocols, it was apparent
that no new themes had emerged. I realized that inclusion of other co-researchers was
not needed. Upon reading and rereading the protocols, I noted selected statements that
held particular significance. These were key points or "elements" which influenced the
learning experiences. These critical points were identified and theme phrases added in
the margins of each protocol (see Appendix E).

The various element statements in each protocol were clearly inter-related with
element statements of earlier co-researcher protocols. Quite naturally, some seemed to
better fit one or another emerging theme, whereas some themes were new and had not
yet arisen within previous protocols. Transcripts and original tapes allowed immediate
verification if a particular meaning wasn't clear. Labeling element statements led to
development of a particular framework that followed the sequence through which co-
researchers originally presented their experiences. This enabled me to group and
regroup element statements according to specific labels through which themes were
identified. Eventually all of the elements bearing one label were placed together under
the specific theme that the statements described.

**Common Themes**

After reading and rereading the co-researchers' validated protocols, I arranged
specific elements assigning labels for common themes according to the order in which
each had described her experiences. I found the following themes to be common among the six protocols. Co–researchers emphasized: (a) the dramatic impact which various physical and cognitive limitations have on decreased task performance abilities (i.e., reduced stamina leading to intolerance for new experiences), (b) the strong motivation each felt for learning "survival" strategies so family members would be comfortable about them continuing to live alone, (c) the personal acceptance of "achievable" independence and acceptance of increasing reliance on support networks (i.e., family and or friends), (d) the need to sustain autonomy, (e) the importance of access to adult learning experiences (i.e., exploring assistive technology use at home), (f) the importance of gaining access to technology as enabling strategies, (g) the need for reinforcement of new learning through sharing that new learning with friends, and (h) prideful recognition of personal learning reflected across their individual lifespans.

**Protocol and Individual Description Development**

The co–researchers' experience of learning to use assistive technology yielded a wide range of detailed commentary during personal interviews (see Appendix E). Captured verbatim during audio tape recording, statements were incorporated into lengthy transcriptions, i.e., protocols. This extremely time–consuming process enabled me to gain an in-depth understanding of co–researchers' statements. Written diaries (i.e., multiple daily notations regarding learning process) were thoughtfully reviewed during this time as a secondary format for better understanding individual experiences.
Following review of the fifth co-researcher protocol, no new themes emerged. In order to assure that the saturation point for identifying new themes had been reached, I felt it wise to include a sixth co-researcher. Inclusion of the sixth person yielded no additional themes; thus, further co-researcher input was unnecessary. Upon reading and rereading the protocols, I noted statements that held particular significance. These were key points or "elements" which influenced individual learning experiences.

Repeated readings of the protocols created a feeling of groundedness for me. I was able to work within an emerging framework following in-depth reflection on co-researchers' comments. It was possible to group and regroup element statements according to specific labels.

I recognized issues of critical importance to co-researchers. One overarching issue that seemed to leap from within every description was their need to sustain participation in social roles that had long been significant in their lives. These included those of the mother, grandmother, sister, friend, teacher and student. Each woman admitted more frequent feelings of dwindling self-esteem whenever new symptoms arose indicating changing physical and cognitive profiles.

Despite the increasing number of physical and cognitive limitations, the women gave no indication that they considered choosing role abandonment but rather they showed an awareness of the need for role modification. Indeed, life social roles for each woman were felt to be core "reasons for being" which continued to enhance and improve self-esteem. They felt a need to engage in productive and rewarding task performance every day, i.e., personal health-care behavior modification, introduction to
new home management strategies, and/or finding ways to resume a nurturing role. They indicated that increased access to education about assistive technology lent stability to rapidly changing worlds. Motivation to learn continued as they sought to reshape changing lifestyles in their later years.

The Co-Researchers' Individual Descriptions

Upon completion, individual descriptions were mailed to the six women for editing. Invited to make any changes that they felt important, co-researchers validated the descriptions through reviewing my narrative as primary researcher. They each found affirmation of their respective learning experiences. Betty, the third co-researcher to be interviewed said, "... I feel as if I've successfully completed a review of my life." All affirmed accuracy of their individual descriptions indicating they felt there was a clear relationship to personal statements.

In this older adult population, the context, within which individual descriptions of learning experiences were developed, clearly included multiple components. Among those identified were: (a) self-care needs or the degree of limitation caused by specific physical and/or cognitive changes, (b) the enduring strength of each woman's desire to live alone, (c) self-care practices (i.e., social support, resources for self-care), and (d) indication of willingness or motivation to modify or change self-care practices. Each of these variables had daily impact. These factors must be considered with thoughtful attention if one truly seeks to understand their influence on motivation for learning for these six women.
Betty's Learning Experience

Betty came to the study on referral from staff at an adult community program at the local Senior Center. Upon invitation, she accepted immediately. Clearly she was pleased to have an opportunity to contribute to research about adult learning. She is the oldest co-researcher, and experiences the most serious health problems. She was the third researcher to be interviewed. Two interviews were conducted at the Senior Center and two in her home. After each interview, Betty reviewed and verified transcript details. On return receipt, I reread them often so as to immerse myself thoroughly and to better understand Betty's experience.

Betty, 84 years old, has been a widow for 25 years. Four years ago she experienced increasingly serious health problems leading her to relocate. Moving from rural Maryland, her family helped her locate a town house in a suburban area, bringing her closer to them. The move also brought her closer to a physician in whom she had considerable trust.

Within the first year following relocation, Betty was admitted following major cardiac insufficiency that required bypass surgery and a right carotid artery enterectomy. The latter extremely risky procedure entailed the removal of fatty deposits in a severely blocked blood vessel in her neck. During that procedure, she experienced a mild stroke causing her to temporarily lose her speech for a few days. She subsequently regained her speech. Although the physician told the family that the residual impact from that stroke was minimal, they felt the impairments were moderate to severe.
Betty's Individual Description

"Living with Cardiac Insufficiency:
Technology Learning Enhances Life Quality"

I feel that my interest in individual learning had its roots way back in my elementary school years. Strong parental support encouraged me to explore and eventually choose a teaching career. Indeed, the monetary support from my parents enabled me to manage college expenses with the addition of only a part-time job. I feel fortunate that with their help, I achieved this beneficial milestone at a time when women completing college was not the norm.

I give full credit to my parents' for being responsible for demonstrating the benefits of a strong involvement with family and friend networks, and for promoting the importance of autonomy. These influential traits positively influenced my lifestyle. I tried to extend them to our children during my parenting days. The lifelong impact of exposure to those beliefs and values extended from my childhood, and continues to influence my daily world even now in late adulthood. Further, those attitudes laid the foundation for personal expectations of mine and acceptance of ongoing family/friend support as life transitions have occurred across the years.

Network reliance, or inter-dependence, was definitely a critical linchpin pulling my life transitions into a more meaningful profile. I'm not surprised that interdependence became an integral component and part of my family child rearing practices as well. As parents, my husband & I offered role models relying on strong support from family/friend network. Clearly emphasis was placed on individual learning for all three of our children as well.

Even now despite increasing physical and cognitive changes losses [sic] inter-dependence, autonomy and individual learning continue to be highly valued attributes. I feel very fortunate that family and friends offer me their strong support. For example through their willingness to provide me daily transportation, I'm still able to devote my dwindling energies to community involvement.

I thrive on regular attendance at the local Senior Center two days a week. I find great satisfaction in filling this community leadership role. It helps me to keep my self-esteem. I feel daily recognition through this chance to give leadership through the Center's Newcomers Support Group. I benefit tremendously from my membership and attendance at
monthly meetings of the Senior Center's Arthritis Support Group, the local Garden Club, and the Cooperative Ministry.

I'm pleased when my friends say that I've helped to increase access for them to continuing education opportunities. I realize that my life-goal and cherished "reason for being" continues to be achievable because of my supportive network. I have continued volunteering in personally selected community service organizations, exerting my autonomy through being in charge and controlling my daily world.

I recognize multiple adaptive needs which result from the various physical and cognitive changes with which I wrestle each day. Recently energies available to me appear to be dwindling even further. I'm actively investigating the prospect of relocating to a continuing care community in order to find a more supportive environment. In the group housing arrangement I'd have help in making decisions. I'd receive personal care and/or home management assistance.

**Excerpts from Betty's Learning Diary**

I tried ten products. Learning how to use them at home, I made daily comments in my learning diary. Included were: the sock aid; a long-handled bath brush; playing card holder; several types of reachers; a door knob grip; a no-hold magnifying reader; and a T-handled bottle lid grip for multi-sized tops.

The most important product to me was the sock aid. I have a problem bending to reach my feet in the shower. It worked OK but I got more tired doing the task with the aid than I did without it. Right now the product doesn't meet my needs. The cords just didn't work right and hurt my hands. Over a longer time, maybe I'd get used to it. It might take less energy to bathe than without it. Right now I just don't have the patience to keep trying. The shape of the part over which I stretch the sock seems right, its the cord material that was wrong.

The reacher with the lock worked best because I didn't have to hold tightly to the object I picked up. The locked grips held it in place as I grasped it from the low or high shelf and put it on the work surface. The bath brush was easy to use. I found it took less energy to wash myself practicing daily. Usually, I get so tired bathing with all the bending and stretching I do. I felt refreshed after I finished bathing for the first time in a long time. I think the sponge on the swivel head is what helped me most. I found I barely pushed to get it over my body parts. I plan to ask my children to get one for me. I practiced with most
products several times daily. Due to my memory difficulties, it was necessary to practice repeatedly. In fact, I practice with my grandchildren to assure myself I'd remember when I showed my friends at the Senior Center.

The door knob grip really helped on the door which is so hard for me to use. It's well designed once my son slipped it on for me, it never came off. The card holder really was easy to use. My arms used to get tired before the game was over. This time I played with my grandchildren and they were pleased I stayed in the entire game. My family supported all my learning efforts. I'm so glad they feel less burdened because I can do more, I get less tired and I've also found friends who can help me.

**Dorothy's Learning Experience**

Dorothy, 72 years old, has been a widow for 10 years. About a year ago, her daughter, a realtor, helped her select and move into a brand new, spacious condominium. This move allowed her to weed out the lifetime collection of furnishings and possessions that she no longer wanted.

Furnishing the condominium was a learning opportunity for the entire family. New furniture and storage arrangements were agreed upon in order to focus on convenience and ease of living.

Dorothy was the first person to be interviewed. She has volunteered for five years as the facilitator for the Diabetes Support Group. The group meets twice a month at the neighborhood Senior Center. She was pleased to locate a retirement job that tapped those skills acquired in her previous 30-year career as an office manager.
Dorothy's Individual Description

"Managing Late Life Diabetes With Assistive Technology"

The experience of learning about assistive technology satisfied my wish to be more in control of my rapidly changing lifeworld. Major health challenges revolve about improving my coping skills to manage her chronic illness, diabetes. Motivation to learn new strategies is high because I expect to continue living alone for many more years. Joining the local support group enables me to keep abreast of the latest information, learn better coping strategies and to assist in others' to do the same.

I'm aware how fortunate I am that I can still drive because that gives me so much independence. Selecting this new condo which is situated out in a more rural area, off the public transportation routes wouldn't have been possible without being able to drive a car. I can choose freely to come and go as I please. Driving allows me to stay as active as my energy level allows. I keep pretty busy during the week. I slow down on weekends, and regularly spend most of my time with my grandchildren.

Attending the Senior Center is important to me because of the availability of support groups where I can learn how others manage their diabetes. Participation allows me and other group members to get and give help to one another. We often contact one another outside the meeting time. This gives us a direct line to immediate support and help in meeting problems of the moment and trying to adapt to rapid change.

I recognize that I tend to ignore, maybe even deny my limitations. Daily activities began to be increasingly difficult several years ago. Now, I've had trouble for so long, like my doctor tells me, I just shrug it off and attribute it to old age. Lately, since I've learned about these new products which can help me better manage my normal aging changes and/or diabetic change, I'm feeling more optimistic.

For me dwelling on the negative approach and admitting I'm just getting older made me feel out of control in managing this disease. I prefer the proactive approach. Optimism about how to deal with expected changes motivates me to explore and adapt new ideas and learn about the widest array of available products.
Recognizing that these items aren't sold at the local store made me feel I needed to listen closely. Although catalogs are available for mail order, I understand no one in our group was on the distributors mailing lists. My physician certainly had never even mentioned them to me. I'm disappointed to realize that the physicians don't even know about these special products.

I'd begun to feel that my health problems were limiting the activities I wanted to do each day. For example, there are several new and necessary tasks which I've learned about from my doctor and his nursing staff. Since finding out five years ago that I have diabetes, I've realized that I am vulnerable and at risk for many more serious problems. My expectation is that I may face very serious problems unless I learn now how to modify my lifestyle as well as my environment.

My doctor told me I had to quickly learn how to give myself insulin. His nurse showed me the process and I've practiced on my own. I knew I still had a strong hand grip and my eyesight was keen, therefore I felt I'd be able to manipulate the insulin syringe easily. Close vision acuity is also needed for measuring the required amount for the syringe. All of this is easy enough for now. Naturally, I must expect this could change for me some day. Making healthful lifestyle changes now can slow down the process of diabetic decline. That is my immediate goal.

I'm already overweight so the doctor's second recommendation was that I address the nutrition/diet issue directly. It is more time consuming for me. I don't enjoy cooking and eating alone so I regularly eat out in restaurants. Consistency in making appropriate choices is much more difficult for me. Finally, I do feel that my food selection abilities are beginning to improve.

I hear other group members talk about experiencing other more serious problems than I. For example, severe vision loss and quite often absence of sensation in either hands or feet [sic]. Balance problems often result from sensation change in the feet. Circulatory problems can limit wound healing and lead to skin care problems. In fact, I've begun to realize I have the beginnings of sensation loss in my feet to a minor degree.

I fear potential health crises outcomes which are more typical of the diabetic condition, i.e., toe, foot or leg amputation and even total vision loss. The members of the Diabetes Support Group want a chance to learn how to better manage diabetes so as to avoid such unnecessary
crises or at best slow their arrival. Learning about this wide array of assistive technology products seems like a good way to master needed lifetime skills for better self-care in managing diabetes. It allows me to choose individual learning, a method preferred by me and others in our group, in order to master critical survival capabilities.

Subsequently, I found that additional learning reinforcement came as I practiced with the products at my own pace during the next week at home. Opportunity to tell other friends outside the group was most helpful. I quickly realized these same products might offer them solutions since often they were experiencing similar problems. I realize I've gained heightened awareness about products which may be useful for me in the near future.

**Excerpts from Dorothy's Learning Diary**

I chose 14 products, and entered daily comments during a one-week trial at home. Items were: extended bath sponge with a swivel head; reachers (3); palm grip staple remover; extra shelf space; playing card holder; T-handle bottle grip; uni-turner with an L-shaped handle; magnifiers (2); "good-grip" vegetable peeler; and a door knob grip.

The most important product for me was the bath sponge. Due to the loss of sensation in my feet from my diabetes, I must give particular care to my skin to avoid abrasions. My weight makes it hard for me to reach my feet. This product really didn't work for me. I need something which will slip in between my toes. I even had trouble using the sponge on my back. The swivel head seemed hard to push over my shoulders. I found it wasn't even easy to hang it in the shower so it was there when I needed it. Maybe they have another sponge head shape without the swivel joint, I felt awkward using it—not safer by any means.

The other products worked better for me. The reacher with the lock was easier for me to manage. The other reachers required constant squeezing on the handle as you move the item through space. In the office, the palm grip staple remover was easier to use than the old style pinching with the thumb and index finger. The extra space shelf hung on the edge of most of my kitchen and bath storage shelves and increased space available. I've already gotten one from the hardware store.

The two different grasp jar openers "T" and "L" shaped worked really well, I'll keep them in mind. Hand sensation may change as in my feet, grasp those
handles would work easier. The magnifying products helped, I'll tell others about them. The good grip vegetable peeler was a breeze to use. I've decided to get one of those next time I go shopping.

My grandchildren come over every weekend. I enjoy teaching them how to use them and they always bring me new ideas. My daughter and her husband feel I'm safer now to live alone.

**Eloise's Learning Experience**

I was waiting for Dorothy to review and validate her description's accuracy, I completed Eloise's interviews. Eloise, a 73-year-old woman, has been a widow for 3 years. She is a charter member of the Arthritis Support Group at the local Senior Center. She described daily struggles with her typical routines.

Eloise readily admitted that daily routines fluctuate depending on the pain she may experience on any particular day from osteoarthritis. For example the morning of the interview, she said, "I could barely finish bathing or eating because of pain. But since I planned to come to this Senior Center meeting in late morning, I was motivated to get up and move about slowly."

**Eloise's Individual Description**

"Managing Osteoarthritis Through Technology Learning"

I describe myself as an individual learner. I know that I learn best when I have immediate need for the information I'm hearing. I must allow time for practice or reinforcement time. I prefer to read information, write notes about what I hear, using visual learning as well, through diagrams or photographs. The impact of learning lasts longer for me when I have the chance to demonstrate the newly learned information to a friend.
If I have a problem for which I seek a solution, I start asking for suggestions from my friends about what is available for reading. Next I make lists of questions and seek answers for those specific questions. I talk with friends, listen to TV or radio, inquire of shop keepers, discuss it at support group meetings, and browse in local shops looking for similar products.

On good days, I have very few complaints. In fact, since I find I'm able to do most tasks which I've planned to do, occasionally I end up doing too much. Fortunately, I can still drive so I am able to take care of local errands with only minor discomfort. Generally, I have ample free time. I regularly attend the Senior Center twice a month when the Arthritis Support Group meets. I enjoy participating in activities of that group because I want to stay aware of new information that might help me. I recently began to volunteer part-time at the Senior Center in a clerical job which is the same type of job I used to have.

Health problems obviously limit some activities, although not on a daily basis, just those days when the arthritis flares up. The kind of assistive technology product I need to find and learn how to use is something to help me on those worst days. I want to be able to do necessary tasks but with less stress and pain from joint movement. My arthritis primarily limits grasping or twisting motions, so I need to find an assistive product that can make that task possible with less pain.

Individual learning has been the way to solve problems whenever any arose for me. I listen to my friends explain how they manage. I also read as much as I find available to help me solve those problems. I count on my physician for his advice about medications and he makes occasional dietary suggestions. Learning about assistive technology products for managing arthritis seems to be a major attitude issue. As a proactive adult, I've decided not to let arthritis get the best of me.

Unfortunately, I didn't have good role models. Neither of my parents coped well with their arthritis. As it got worse, they just seemed to stop living after reaching their 60th birthday. When I realized how many limitations I'd given into, I knew it was time for a change!
The Support Group membership offer classes and recently introduced new products. At the same time the occupational therapy students showed us how we could do activities in more appropriate ergonometric ways to minimize stress on the painful joints.

For example, I know my arthritis is worse when I'm emotionally drained. I've learned how to pace myself to lessen the daily stresses I face each day. My stamina fluctuates dramatically. Often at a weeks' end I've not done important housekeeping chores. I feel angry with myself. I avoid the task which is painful to do but will not ask someone else to do it for me. My personal independence remains critically important to me. It continues to be a barrier, therefore, I find trouble accepting an interdependence lifestyle.

In thinking about those assistive products which we regularly used, our group has so many people with arthritis our list probably exceeds that of most adults. The assistive technology products used by most in our group included: eyeglasses, dish and clothing washer/dryers, vacuum, telephone and answering machine, television, tape deck, and VCR with remote controls. The least frequently used items were: cane, wheelchair, walker and hearing aid.

I took products home to learn more about because they might assist with me with kitchen tasks, i.e., opening containers and jars. Using my hands in a task which requires a tight grip gives me the greatest problems. Product packaging used nowadays protects an item in the store from theft, but it makes it particularly difficult for the end user at home. I frequently use ready made salad dressing and other sauces. Since I'm only cooking for one person, small sizes are best choices.

The five different styles of bottle openers which I learned how to use worked on a wide variety of lid/top diameters. I'm particularly interested that the product I first tried did not work for the many different bottle sizes I would need opened each day. Different models allowed varying levels of comfort in grasping and weight-bearing during my most painful moments. I pay particular attention to joint protection in order to avoid any permanent soft tissue or joint damage.

I developed a long list of questions to guide me in choosing the most appropriate product for me. Answers I gave helped me decide if I wanted to take the time to learn more about how to use the
product. They also help me to introduce my friends to these new products.

- How often did I need to complete this task each day?
- Could I do the task with less pain?
- Was it comfortable to hold: too heavy? too hard?
- When I use the product do I save energy or time?
- Do I feel safe using the product?
- Does the product make me feel more dignified?
- Does it make me feel less dependent on someone else?
- Could I design the product for greater ease of use?

Responses to these questions certainly guided me in making my final choices of one product over another. I expect over time it might lead me to discover other techniques useful to me or my friends for easier task performance.

The discussion at the Support Group about how older adults can better maintain independence seemed to interest the whole group. Most of us feel our loss of ability to be the only cause for decreasing activity performance. This new awareness that our home surroundings or the type of tools we choose to do activities can directly influence independence gave me encouragement to keep trying.

Suggestions that we older adults try hard to reduce daily activities' demands which exceed our personal abilities was food for thought.

**Excerpts from Eloise's Learning Diary**

I found 13 products that I wanted to learn about. Items were: jar lid grips (3); scoop plate with rim; plate surround; reachers (1); plastic sock aid; long-handled scrub brush; playing card holder; magnifying lens (2); good grip vegetable peeler; and a door knob grip. It was helpful to make learning diary entries to keep the information clear in my mind.

My arthritis pain is really unpredictable and changes during each day. I used the tools several times every day too compare whether it made it easier or harder to do a task. I need soft circular handles which I can gently wrap my palm around and the tool can't be too heavy, I must protect all my joints from extra stretch. The most difficult tasks are in the kitchen & bath, like opening containers or turning faucets. All the products for opening
containers worked well for me, some better on one day than another. Ideally I'd like to get them all but I can't afford them. I'll ask the family to buy them one at a time.

The plate surround and the plate with a raised rim were both useful. I could hold my eating utensil and slide food on without twisting my wrist so hard to capture a morsel. The reachers didn't work at all for me. I guess because my joints are so fragile, having a heavy weight at the end of the extended handle was just too awkward to manage. The sock aid was too hard for me to manipulate as well. The bath sponge was no good because the handle was the wrong shape and the angled edges hurt my palm.

The extra shelf space reduced awkward stretching. It meant I didn't have to angle my wrist sharply to grasp an object from high or low shelves. The card rack was a boon, now I can last the whole card game. My fingers don't hurt from squeezing the cards.

Some of my grandchildren visit me each day. They're pleased I'm motivated to keep trying and I still want to become more independent. I also can readily admit when I need help and not feel badly about accepting support. I realize I feel better when I can help others despite my limits.

**Catherine's Learning Experience**

Catherine, an 80-year-old woman, had moved to the senior apartment building in order to be nearer her son, daughter-in-law and granddaughter. Married for 22 years, she had been a widow since 1966. She readily admits that "no one in her family ever taught her what it would be like when she grew older." In fact most of her relatives had died before they reached 50 years of age.

Although still quite an active individual, she recognized increasing difficulty with home management tasks. Her diabetic problems appeared to be increasing (i.e., vision loss and the disappearance of sensation in her feet and lower legs). She already has a family member fill her insulin syringes. Despite those changes, she
continued to place high value on maintaining her daily spiritual life. She was proud of her ability to walk next door by herself to attend Mass at the Church. The personal reward she gained from doing volunteer activities was often a topic of her conversation. She participated daily in multiple church groups, i.e., bible study and "shut-in" phone visits. Staff at the Apartment invited her to volunteer for residents, i.e., take mail or visit "shut-in" residents at the complex.

Catherine's Individual Description

"Low Vision Assistive Technology Learning"

I describe myself as a slow learner. I know that in the past I learned best after I felt the real need for information. I rely on my hearing more than seeing nowadays. I must allow time to listen to a person's directions or to directions on audio tape. After that, I need to practice with the instructor for critically important reinforcement. Since my eyesight has gotten so poor, reading information doesn't work for me. Using visual and tactile learning, i.e., personal demonstration and hands on trial, has become my first line of instruction.

The impact of new learning lasts longer for me when I immediately make the chance to return demonstrate back to the instructor. A further reinforcement is when I can share the newly learned information with other friends. If I have a problem for which I seek a solution, I start asking for suggestions from my friends about what is available related to that problem. Next I seek answers for those specific questions from health professionals who come to our seminars.

I talk with friends, listen to TV or radio, inquire of shop keepers, and discuss it at health education group meetings. For example, the assistive technology demonstrations we had were invaluable because we can't browse in local shops since these products are not yet available there. They're not distributed in consumer outlets.
On good days I really have very few complaints. In fact I find I'm able to do most tasks which I want to do, occasionally I exhaust myself helping my friends. Fortunately, there's access to public transportation. I generally arrange my outside errands according to the days we have a van pick up to shopping malls and arrange to go with my friends. When a doctor's appointment comes up unexpectedly, my church friends volunteer to take me.

I attend all of the health related meetings downstairs. I really enjoy participating in activities of that group because I want to stay aware and learn all the new information that might help me sustain independence and remain able to live alone.

Health problems obviously limit some personal care and home management abilities on a daily basis. The kind of assistive technology product I need to find and learn how to use are things to help me compensate for my low vision. At the moment, I want to be again be able to write my own checks, do my bible study assignments, and write letters to my old friends. Recently, my granddaughter has been helping me with these chores. You have to be able to accept the fact that other people will get to know your personal business.

Individual learning has been the way I've solved problems throughout my life. I always listened to my friends explain how they coped with their problems. Learning about assistive technology products for managing these diabetes complications makes good sense. I never want to have to move in with my son and his wife. We get along well living apart from one another, but I doubt it would be the same if we were under the same roof.

Unfortunately, in my family life, I didn't have family members who managed chronic health problems well, i.e., diabetes and arthritis. Neither of my parents coped well with their diabetes. As it got worse, they just seemed to stop living as they reached their 50th birthday. When I realized how many limitations I'd seemed to be accepting, I knew it was time for a change!

Membership in the Senior Apartment's Health Club allows me to get to all their classes and learn about new products and useful strategies. At the same time the occupational therapy students showed us how we could do activities in more appropriate ways to
minimize stress from the apartment settings which aren't as supportive as they might be.

For example, I know my fatigue gets really bad when I'm emotionally upset. I'm trying to learn how to pace myself better to lessen the daily stresses I face accepting my dependence. My stamina fluctuates wildly. Independence and living alone remain critically important to me. I have real trouble with accepting the thought of moving in with my family or going to a nursing home.

In talking about assistive products which we regularly used I surprised myself about how many I already use. The assistive technology products used by people living on my floor were: eyeglasses, dish and clothing washer/dryers, vacuum, telephone and answering machine, television; tape deck, and VCR with remote controls. No one on our floor used a cane, wheelchair, walker or hearing aid.

I decided to take products home to learn more about them because they might assist with me with kitchen tasks, i.e., reading appliance dials, food labels. Product packaging nowadays protects an item in the store from theft, but it makes it particularly difficult for the end user to read the package contents. I frequently use ready made salad dressing and other sauces. Since I'm only cooking for one person, small sizes are best choices.

Here are some questions I've found helpful in choosing the most appropriate product for me. Answers I gave helped me decide if I wanted to learn more about how to use the product. They also help me to introduce my friends to trying new products. Most of them tell me they're interested in these same questions.

- How often will I do the task each day?
- Could I do the task in less time with the new tool?
- Was the tool comfortable to hold (i.e., too heavy? too hard?)
- When I use the product do I save energy?
- Do I feel safe using the product?
- Does the product make me feel dignified?
- Does it make me feel less dependent?
- Could I design the product for greater ease of use?

Answers to these questions certainly helped me choose one product over another. I expect that my friends will teach me new
techniques for task performance. The discussion at the Health Club about how older adults can stay more independent was fascinating. I always felt my increasing dependence was due to my diabetes. I never blamed it on my home setting or the type of tools I use to do daily tasks. That discussion made me want to keep trying. Suggestions that I might create solutions which reduce activities' demands which I can no longer handle puts me back in charge.

Excerpts from Catherine's Learning Diary

I chose 13 products to learn how to use at home. Items were: a 4-track tape deck; scoop plate w/rim; playing card holder w/enlarged print cards; jar grips (3); magnifying lens (2); good grip vegetable peeler; large handle writing pen and check writing guide; extra shelf spacer; and a door knob grip. I entered daily remarks on my taped diary so I could remember the facts for my friends.

Because of my failing vision, the most important items for me were the audio tape deck; the large-handled pen and the check writing guide. I wanted them to work well for me so I practiced several times daily. It was fun to show others how to use them. I was happy that all these items were immediately helpful. Now I can keep up with home work from my church groups. Personal money management took less time, giving me free time to help apartment residents who are worse off then me. I was really proud not to have to ask friends to write checks.

The plate with a raised rim helped me to better manage small bites of food on the plate. The magnifying lens didn't work at all for me, I returned them quickly. The card holder worked perfectly with the large print cards. I've not been able to play in years. I've made new friends because I like to join them in their daily games.

Learning how to use assistive technology made such a big difference for me! I'm busy to telling everyone about what worked for me because I figure it might help them too. I was really surprised that my doctor didn't even know about these products. I'm sure over time other tasks may become difficult. It's good to have some hope that other products might help if complications arise. I'm glad the occupational therapist introduced all these products.

It made my granddaughter happy that I'd learned to use these new products. Now when she visits on the weekend, we spend our time on other
more fun activities. I'm teaching her how to knit and crochet. She's always been amazed I could still do those tasks when I had trouble with my money management and letter writing.

**Agnes' Learning Experience**

Agnes' typical daily routine included participation at the Center four days a week. When her family suggested she move to Maryland to be closer to them, she was relieved. Faced with an increasing number of serious health problems, she'd worry night and day what might happen should another emergency arise. They searched near their home in Maryland for many months and finally found this first floor apartment. She did her own grocery shopping at the nearby mall which is just across the street from this apartment complex. Relocation was not an easy adjustment for her. However, she soon felt welcome and made many new friends. And equally important, she now saw her grandchildren each weekend.

**Agnes' Individual Description**

"**Cancer & Diabetes: Management with Technology**"

I barely got situated, finished unpacking all the boxes and attended a Center program when a major medical crisis occurred. During my initial checkup with the physician who'd assumed my diabetes care, cancer surgery was found to be needed. Following the radical mastectomy, I was really quite depressed, recovery took so long.

When I finally came home, my son's family hovered close by and this process of learning at home began in earnest. My family helped me get through the adjustment ordeal. Suggestions made by the doctor they insisted I adopt were specific safety measures in daily routines.

For example, I lost the ability to lift my left arm over my head as a result of the surgery damage to muscles. My son and family
instructed me until I'd mastered the use of: a tub bath bench, a hand held shower, a long handled bath brush and another tub cleaning sponge. I never thought I'd ever come to the place that I needed so many special products just to bathe myself. Now, I don't think twice about using these things.

At first it was difficult to remember to sit down on the bench before I began to get into the tub. Then I had to consciously remind myself not to stand up to turn on the shower. Instead I just needed to grasp the hand held shower to turn the water on.

My son and his family took a lot of grief from me. I'd get angry and kept telling them I preferred to do it the old way with no gadgets. They realized with the physical changes now existing following surgery, I needed to use those products to compensate for lost motion and balance.

Learning to use those products in the bathtub and in the bath routine was my biggest hurdle. They helped me understand that if I was to keep myself clean and be safe at the same time I must learn new self-care strategies. The doctor convinced them of the importance of reducing my risk of injury from a fall in the tub.

Obviously, all of these health problems at once made me feel out of control. I am really quite seriously limited in my daily activities. It is a daily struggle just to get up and about. My energy is drained every day just following the simple routines I've learned I must do for myself. Learning new routines is what it's all about! Once we learn them we should teach our friends about these tricks.

Yes, I am within walking distance of critical necessities, i.e., the supermarket, the community center, and the church. But whenever I walk to these places my energy level is extremely challenged. For example, to get ready to go to the Center, grooming, bathing, toileting and dressing takes more time and energy since I can no longer lift my right arm above my shoulder. I used to be right-handed, but needed to develop better use of my left hand to compensate for the reduced range of motion.

In the cooler weather when I need a wrap of some kind, getting a jacket or long coat on is really difficult and takes a very long time. I'd like to find a product to help me put on my coat. I'm already
tired, once I'm finally ready to start out the front door. Walking across the parking lot, I lean on every car I walk past.

I intensely dislike having people offer to help me. But at the Center they see me struggling to get my coat on and they automatically offer to assist. I've watched several Center participants who've had a stroke and have weakness on one side of their body. One woman, a staff volunteer at the Center in their Nutrition program, showed me how she takes care of putting on her coat.

She said she began by sitting down and placing the length of the coat over the chair back. In that position, she doesn't have the full weight to hold. Now she's able to stand up to do it and can move her body in position to slip the sleeves over the arms and get the garment far enough up over her shoulders. I find I just can't imitate her body motions to make that approach work for me. And sitting down to do that task would simply embarrass me too much. I guess I'll just have to accept another person's help in order to get my coat on in a reasonable amount of time.

Following my cancer diagnoses, unexpected surgery, and discovery of diabetes, I became depressed. During my recovery phase, I just knew I still wanted very much to live alone. I realized if my son was going to allow me that choice to stay in that new apartment, I knew I needed to accept some of his suggested solutions. He and his family had to be convinced that it was still safe for me to be on my own. Changing my lifestyle and gaining new problem solving skills is not easy for me.

Excerpts from Agne's Learning Diary

I selected 13 products to learn how to use at home. Items were: folding dressing/reaching stick; sock aid; shelf spacer; jar grips (4); long-handled bath sponge; magnifying lens (2); "good-grip" vegetable peeler; and door handle grip. Entering daily diary comments helped me remember the facts when I showed my friends how to use them.

The most important products for me were the dressing stick and the sock aid. Since my mastectomy, I can't lift my right arm over my shoulder. Putting on shirts and coats are hard. Since I learned about having diabetes, foot care became important. Reaching my feet is also hard for me, so putting on half stockings or even socks is difficult. The dressing stick
worked OK at home for light weight garments, but not my winter coat. In fact it broke, I'm sorry. But it did turn out to be helpful as a reaching stick. The sock aid worked so-so for me. Maybe if I kept it for a second week, I could get better at it, or maybe another style might work better for me. The catalogs showed several styles were available.

In the kitchen, jar grips, extra shelf space, magnifying lens, vegetable peeler, and door handle grip really made tasks easier for me. I get finished with meal preparation much faster now. My family is ready to buy each of those items for me. They want me to be able to keep living alone for a while yet. I sure have learned how important my family is to me, their encouragement makes a lot of difference.

My grandchildren still come over every weekend to help me get leftover chores done. I used to feel badly that I couldn't take care of everything by myself during the weekdays. Now I've changed my attitude, I accept their help with great appreciation because then I have extra energy for other activities still important to me. I'm amused that some of my gadgets they like to use as much as I do. We're all busy and convenience is a help whether old or young. They like to teach me new things and they like me to teach them. We all feel better when we can help each other.

**Hilda's Learning Experience**

Hilda suffered a serious ankle injury as a young adult as a result of a soccer accident in Germany. Despite a pronounced limp, she moved through life assuming typical social roles, i.e., student, athlete, factory worker, wife, mother, grandmother, and friend across her lifespan. However, she describes increasing mobility limitations with age progression. For example, walking on uneven surfaces or climbing a single flight of stairs became difficult.

After marriage, she and her husband decided to move to America in their early thirties. At the age of 45, Hilda required surgery that could only partially correct the longstanding mobility impairment. By the age of 50, no further surgical
correction was possible so her orthopedist prescribed a short leg brace. This support strengthened her ankle joint and increased mobility.

Her husband passed away on at 65 on the eve of his retirement. Hilda was also 65. At 70 years of age, she retired and moved from Texas because her only son accepted a promotion and his family relocated to Virginia. Hilda, a widow for the past 21 years, has surrounded herself with warm memories of her earlier family life. The cluster of significant paintings and photographs includes some brought from Germany, as well as those from Texas where they lived for many years. These cherished memories cover half of the wall in the living/dining room of this efficiency apartment. The other half of the same room serves as both the dining corner and music corner. A small kitchenette, a separate single bedroom and bathroom are the remaining areas in her apartment residence.

**Hilda's Individual Description**

"Adult Sports Injury Management and Assistive Technology"

Following retirement at 70 years of age, I relocated to a new town because my only son, Kurt and his family had to move when he took the job promotion. I wanted to make new friends at this apartment complex so I began participating and volunteering as staff at the neighborhood Senior Center. The chance to learn how to play the piano through lessons at the Center came as a big surprise.

For as long as I can remember, I'd wanted to learn to play the piano. I guess I thought it would be a way for me to teach others some of the songs I used to like when I was in Germany. At other times I never felt I couldn't begin studying piano because it would mean time away from being a good wife, mother, and working at the factory.
After I got the ankle injury playing soccer when I was about 25, I'd always walk with a limp because my ankle bones didn't heal properly. I always thought I would not be able to use the piano pedal because of that. I'm especially proud since I really managed to learn piano even though I had two handicaps, my age and also the old ankle injury. I've really enjoyed playing and creating music for myself and my friends.

I often think about how much it has helped me by learning to play the piano. First, it's been exercise for my weak ankle. Then it seemed to help me make new friends when I moved here. They all enjoyed listening to me play since none of them knew how. I developed a strong network of friends. My family told me I seemed to be a much happier person after I moved here.

Personally I'm pleased that I've kept up with piano practice every day. I found that personal success motivated me to keep learning other new topics as well. I decided to learn about hand stitchery and found large needlepoint is easy on my eyes. This new sewing skill is related to my previous jobs when I worked in the sewing machine in clothing factories in Germany and America. Now instead of the electric sewing machine to embroider designs on fabric, I'm able to do it by hand.

There is one serious problem which I've recognized lately. I've noticed I have to move quickly when I have the toileting urge and need to reach the bathroom quickly—especially during the night. This is a very serious problem for me because I don't have time to put on my short leg brace to walk from the bed to the bathroom. I'm so afraid I'll have an accident. I've tried to limit my liquids after supper but that doesn't always work.

I need to learn what I can do to meet this problem immediately. Otherwise, I know the apartment coordinator and the public health nurse will tell my son, and suggest to me, that I move out of my apartment. The apartment rules say that tenants must be independent in self-care, i.e., bathing toileting, cooking, eating, transfer, and walking activities if they want to live alone.

The Support Group class where occupational therapy students introduced us to various assistive technology products came at the right time. I'd never heard about occupational therapy nor the availability of any of those products. Those mail order products'
catalogs never came to me. The students' visual teaching approach allowed me and other support group members to understand more quickly. We took time to demonstrate for each other. I felt the bedside commode chair could be the "lifesaver" I needed.

Opportunity to try it out, and borrow the item for a week from the local health department loan closet gave me a chance to try it in my apartment when I needed it in the middle of the night. My family wanted to buy a new one for me immediately. The students directed them to community resources where it could be bought.

Excerpts from Hilda's Learning Diary

I chose 14 products to learn to use. Items were: commode chair (bedroom); sock aid; extended shoe horn; door knob grip; magnifying lens (2); jar lid grip (3); reachers (4); and shelf spacer. Keeping the daily learning log was helpful because then I could keep the facts on each item clear in my mind.

The most important items for me were the commode chair and the sock aid. I never knew I'd have trouble walking quickly to the bathroom in the middle of the night. I just couldn't get the short leg brace and sock on quickly enough. The commode chair in the bedroom saved the day, without using it, I'd have to move out of the Senior Apartments. Independence in personal care is a criteria for living there. The sock aid worked fine in the morning, now it takes much less time to get myself ready in the morning.

I found all the other items especially useful in either the kitchen, bathroom, dining room or the bedroom. The magnifying lens helped me reading product labels or directions, sheet music, words of songs, and sewing patterns. The reachers helped me get items from storage shelves. The jar lid grips were invaluable in the kitchen, bath and bedroom especially for those smaller bottles of sauce or medicines. The shelf spacer brought frequently used items into better reach.

My granddaughter is pleased that I can do so much for myself despite the fact that I've used a cane and short leg brace for so long. She was surprised when I told her that I needed to use the commode chair at night. But she agreed it was certainly a better solution than having to move out of the apartment and into their home. I'm lucky my son, his wife and daughter will take me at their home when I'm not able to stay here anymore. I just don't want to go into the nursing home before it's actually needed.
Development of the Fundamental Description of Learning to Use Assistive Technology at Home

The intent of developing the Fundamental Description was to provide an understanding of the experience and meaning of learning to use assistive technology at home. The paragraphs from the validated individual descriptions provided an overview of that which was basic within each of the six experiences described by the six women, ages 65–85 who served as co–researchers. The foundation for the fundamental description emerged as I wrote the individual description.

The process of grouping the elemental statements and identifying theme labels within the protocols, offered opportunity to read and reread and endlessly reflect. The statements were thoughtfully sorted, regrouped by themes and then compared. After the sixth protocol it became clear that no new elements had emerged. Therefore, I felt that the saturation point for describing this experience had been reached and decided not to involve additional co–researchers.

Common and significant themes from individual descriptions became the foundation for the eventual development of the fundamental description. The general description included below reflects the meaning and the experience of learning to use assistive technology at home for these six older women. Older adult co–researchers repeatedly described adaptation to individual physical/cognitive changes as an outcome of ongoing task focused learning efforts. They sought to master strategies which would allow them to remain engaged in productive activities. A sense of mastery was felt as they perceived meaningful use of time and energy.
This Fundamental Description was distributed for validation by each of the six co-researchers. None of the co-researchers suggested any changes. All of them admitted strong satisfaction and tremendous reward in having had the opportunity to serve as co-researchers. They felt contributing to the development of the final description about the experiences of older adults' learning to use assistive technology at home was worthwhile and would be useful to others. They read and reread the description indicating they felt that their experience was indeed reflected. They expressed tremendous satisfaction at having the opportunity for their "voices to be heard and recorded for others to see."

**A Fundamental Description of the Experience of Learning to Use Assistive Technology at Home**

The global nature of the learning experience of six women, surviving to the age of 65–85 years, struggling daily to sustain independence, clearly created a universal aspect to learning in their later years. Learner motivation in late life was determined within a lifestyle that was directed toward living alone, and that allowed continued participation in highly valued social roles. The opportunity to achieve important late life goals revolved around the women's self-care potential. This potential was defined in a dual context that included self-care needs, and self-care practices. The co-researchers clearly preferred task focused learning experiences seen from a broad perspective that included items within the context of self-care practices.

Self-care needs influencing learning motivation were defined as stressful life events, such as: (a) retirement, (b) relocation to new place or change from house to
apartment dwelling, (c) death of a spouse or close friend, and (d) declines in health status. Declines in health status were felt to be reflective of those typically experienced among older adult populations: (a) cancer, (b) diabetes, (c) cardiac insufficiency, (d) post–stroke, (e) sports injury, and (f) osteoarthritis. Chronic disease experienced created limitations in functional status for these routine daily activities: (a) eating, (b) bathing, (c) dressing, (d) walking, and (e) maintaining continence. Walking limitations directly influenced self-care, as well as participation in social roles at home and in the larger community. Mobility impairments included: (a) difficulty getting to the toilet; (b) transferring from sit to stand postures from tub, chair, or toilet; (c) entry or exit to the home; (d) climbing stairs within the house; (e) moving around in the yard and/or larger community; and (f) doing heavy housecleaning or yardwork.

In the category, self-care practices, were included the following critical components: (a) social supports from family and friends, (b) help with self-care, skills for self-care, (c) resources for self-care, and (d) motivation for self-care. This category parallels those common themes, earlier mentioned and drawn from the individual descriptions and learning logs. These were identified and explicated in detail by review of key protocol statements enumerated in Tables 1–5. Practices included: (a) reliance on individual, (b) task focused learning with encouragement, and (c) support received from family and friends. Help with self-care was generally obtained through the following methods: (a) effort at self-trial using assistive products and/or compensatory techniques, (b) informal learning contacts within these networks, and (c) participating in formal community continuing education classes.
The co-researchers described lifestyle profiles that included goal directed learning experiences as a valued strategy that facilitated problem solving throughout their life journeys. At the outset of the inquiry, the women indicated they hoped to develop abilities to better manage chronic disease. Clearly, they hoped to respond differently to late life stressors than they had seen demonstrated by older family members who had earlier served as their role models. It is important to note that all six women attributed their task performance limitations as the direct outcome of specific chronic disease. This response was similar to descriptions which they had heard older relatives offering to define task performance limitations. No one recognized that there were other crucial variables which influenced task performance abilities. Consideration of the bathing task is useful since each woman had varying degrees of difficulty with the task of bathing. The fact that the woman had limited ability to lift her leg, or reduced hand grip strength creating problems holding/moving the soap and wash cloth was attributed solely to her chronic disease. Following experiential learning opportunities to learn how to use assistive technology products during home trials, the woman realized several solutions for the various problems. These might include modifying the distance through which the woman must lift her foot over the tub wall by sitting down on a tub bench to complete the bathing task. To reduce the excess demand for a hand with weakened grip strength, one might use soap-on-a-rope or a bath mitt with a pocket for soap, or use liquid soap.

The co-researchers realized exposure to experiential learning which was task focused had an empowering impact. They now recognized that there were many options
for personal problem solving that enabled them to regain control, despite chronic disease impairment that would not disappear. They could better manage these chronic conditions from day to day. Demonstrating this new found knowledge to their peers further enhanced their self-esteem. Sharing information about how to use assistive technology products was now possible at the Senior Center in small group settings, or as individual learning demonstrations at home, or through reading articles in the local senior newsletter. The six women felt rewarded because through sharing the information, they could enable many other older adults to recognize added potential for increased independence and better management of chronic diseases. Each felt she had new options from which to draw in the future.

Motivation increased for both instrumental learning and expressive learning. Their eagerness was fueled by the co-researchers' desire to better manage daily limitations caused by one of the variables: (a) limitations caused by their chronic disease, (b) a poor choice of tools for task performance, and (c) through modifying the home setting where the task was performed. In so doing, they expected to be able to continue living alone and to fulfill valued social roles at home or in the community. Among the roles highly valued were: mother, grandmother, employee or community volunteer, teacher, student, and friend. These older learners expected that through achieving skill mastery in the use of various assistive technology products, they could improve personal task performance in self-care and in home management. A second expectation was that through learning how to use assistive technology, they might reduce excess energy expended for daily task performance. Although they were not yet
successful in reducing energies expended, they continued to use the products with the hope that over time the excess energies expended might decrease.

Learning about new community resources enhanced their ability to meet self-care needs. New resource persons now recognized included the Senior Center group facilitator, the community occupational therapist and the occupational therapy students, and the Office on Aging staff. As a component of more appropriate self-care practice, learning about community resources was highly valued. The six older women recognized that even though they demonstrated varying levels of impairment, each had regained a heightened sense of control through education made available through those new resources. The presence of continuing personal limitations seemed less worrisome to them. The inner knowledge of assistive technology use was viewed as a newfound personal resource. They found they could now accept increased support from family and friends without feeling pronounced loss of self-esteem. Indeed, they were now able to accept limited dependency on family or friends in order to participate in their valued social roles. They felt this attitude change fell into the area of health behavior modification and attributed it to their assistive technology learning experiences.

**Summary of Research Results**

This phenomenological inquiry increased the understanding of how co-researchers in the study, six older women, 65–85 years of age, learned to use assistive technology at home. As co-researchers described their daily experience, I listened to their critically meaningful dialogue. Clearly, I heard their strong preference to continue
living alone in their home of choice. I heard how much they valued and continuously voiced their need to sustain lifelong, social role participation. Each woman sought to better manage personal chronic disease, despite multiple physical and cognitive limitations. Included were commonly recognized difficulties performing daily activities such as (a) walking, (b) getting about outside, (c) bathing or showering, (d) transferring, (e) dressing, (f) toileting, (g) meal preparation, (h) shopping, and (i) doing heavy and/or light housework. Chronic diseases/disabilities experienced included: (a) arthritis, (b) post–stroke and post–mastectomy deficits, (c) diabetes, (d) adulthood sports injury, and (e) typical aging impairments (i.e., reduced stamina, vision, hearing, and balance deficits).

It was not the intent of this study to discover universal truths, nor to make predictions that hold true over time, but instead to explicate contexts for the growing number of older women. Older women's interests, goals, aspirations, and daily routines when achieved, enable them to maintain self-esteem. The need for daily routines don't disappear with the onset of performance limitations. Through the window which the co–researchers opened, we were able to view the lived world of six older women, experiencing typical chronic diseases most frequently found among the older adult population. As listeners to the clear voices of these six older women, we were able to uncover ground structures of the personal learning experiences through the situational context. Little is known about learning experiences occurring at home in the daily world of older women between the ages of 65–85 years. What situations do they face, living alone, despite dramatic functional limitations?
In view of the current aging imperative, the need for better understanding of the meaning of daily experiences by older women has assumed critical proportions. By using the phenomenological approach, the themes, processes and relationships of the experience of learning to use assistive technology at home, as seen through the eyes of these older women, led to new insights as well as new understandings. Among these significant understandings were:

1. Learning was valued highly by these women across their lifespans as a way for them to adapt to change. Each woman viewed learning as a successful strategy for chronic disease management.

2. Although not part of this phenomenological research methodology, subsequent conversations with families and friends of the co-researchers indicated strong support of the older adult's efforts toward goal-directed learning pursuits. Active in the informal support network, family members and friends indicated to the primary researcher that they felt learning how to use these assistive technology products minimized caregiving burdens. Learning how to use AT empowered the women through renewing their sense of control. This new learning enabled them to resume social roles as teacher and volunteer as they shared their new-found information with their peers.

3. Experiential learning was defined broadly by the women and included formal and informal components. Learning reinforcement was realized through peer demonstration and found extremely useful.

4. Learning was viewed by the co-researchers through the context of self-care needs, e.g., relocation, retirement, changing social roles, and declines in health status
resulting from arthritis, post stroke, post mastectomy, cardiac insufficiency, diabetes, adult onset of orthopedic limitations following a sport injury, and typical aging sensory impairments.

5. Learning was also viewed through context of self-care practices, e.g., acceptance of informal support from family and friends for self-care and home management; skill mastery for self-care through learning to use AT products; recognizing new community resources; and motivation to learn better chronic disease management.

6. Learning heightened co-researchers awareness of the direct impact offered by barrier-free environments on task performance through immediate reduction of excess environmental and task demand.

7. The use of AT products in the home and/or acceptance of interdependence on their support network enabled these women to recoup sufficient energies facilitating resumption of valued social roles.

8. In the formal introduction to AT products at the Senior Center, the women predicted increased independence with their use. Following learning at home, they noted positive results from the use of AT products about which they felt motivated to learn. These products were found to: (a) enhance safety and security, (b) sustain independence, (c) assure privacy, (d) enhance activity performance at home, out-of-doors, at the Senior Center, shopping mall or doctors office, and (e) facilitate increased social interaction enabling continued social role participation.
9. Co-researchers recognized the value of and need for ongoing specifically focused training in the use of AT products. They supported increased access to education about assistive technology for other older adults at their Senior Center.

10. Co-researchers found motivation for instrumental learning which they viewed as an investment of time and energy in expectation of future gain (i.e., continued ability to live alone). Goals in this area of learning were associated with resources of health, social support and finances.

11. Co-researchers found motivation for expressive learning to meeting immediate goals such as skill mastery in the use of the specific AT products. Goals in this area of learning were associated with identity, competence, meaningful and purposeful activity, and social affiliations.
CHAPTER V
CONCLUSIONS, IMPLICATIONS AND SIGNIFICANCE OF THE STUDY

This chapter presents the relationships between the findings of this phenomenological inquiry, reviewed in Chapter IV, to previous research, and the implications of this study for future research about older adults' learning needs, such as learning to use assistive technology at home. Previous studies explored continued use of assistive technology by adults with disabilities who had earlier received rehabilitation education through hospital, rehabilitation center, or home health programs. This phenomenological inquiry involved introduction of assistive technology products to community participants unaware of the availability of assistive technology and who do not describe themselves as disabled.

Experiential learning in small groups was scheduled at a local senior center or senior apartment. Six women expressed strong interest in participating as co–researchers in this phenomenological inquiry. The women agreed to taped interviews with me. They were eager to have the opportunity to learn on their own at home with products of their choice. This study responded to gaps earlier identified by Czaja (1990) in older adult task performance research by addressing issues such as: (a) the identification of older women that had difficulty, (b) wider dissemination strategies for remedial techniques, and (c) assistive products already available. It sought information from older women which can make technology more responsive through improved design.

In answer to the question, "What is the experience for older women of learning to use assistive technology at home, and what is the meaning of that experience?", the
six co-researchers described the experience in the context of self-care and self-care practices. Self-care needs included stressful events such as relocation, retirement, declining health status and changing social roles. Self-care practices included: (a) acceptance of social support from family or friends for self-care or home management; (b) skill mastery for self-care, such as learning assistive technology use; (c) recognizing new community resources for self-care, such as the occupational therapist and staff at the office on aging; and (d) motivation to learn strategies for coping with task performance limitations and chronic disease management.

Conclusions

Several conclusions can be drawn from the findings of this study. These include the following:

1. The co-researchers valued their ability to live alone. They were motivated to learn about the use of assistive technology in task performance and home modification in order to continue living by themselves.

2. The women valued continued participation in lifelong social roles which led to motivation for learning to use assistive technology in order to enhance task performance and reduce excess energy expenditure for routine tasks.

3. The co-researchers felt empowered on learning how to use ATDs. Tenewed self-esteem surfaced on sharing the new information with their peers. Health behavior modification through attitude change was demonstrated in their willingness to accept partial interdependence without loss of self-esteem.
The co–researchers continued to experience significant levels of impairment, such as reduced stamina, limitations of balance and visual impairments. Despite those limitations, they felt psychologically ready to accept partial interdependence without feeling they had relinquished autonomy. Their sense of control was now based upon their new knowledge of how to use ATDs. Previously they felt unable to manage their chronic disease and that had seriously reduced their sense of control.

Caregivers' strong support, evidenced through encouragement for parental participation in the experiential learning about assistive technology, culminated in recognition that the older adults' ability to live alone had actually been strengthened. Indeed the caregivers' statements acknowledging minimization of caregiving burden further encouraged their aging parents.

One recognizes that there was no single theory that directed this phenomenological study or predicted the results, nor was there manipulation of the phenomenon being studied—the learning experiences described by six frail, older women, who used assistive technology products at home. Five conceptual frameworks created the anchor around which this inquiry was organized. These were drawn from the literature in adult education, rehabilitation, occupational therapy, and community health education.

The phenomenon of older women learning about the use of assistive technology at home was observed and carefully recorded in the utmost detail. Descriptions of situations, interactions and observed behaviors, including direct quotations from the six co–researchers about the conscious experience of learning to use assistive technology at
home were gathered. The taped and written material was guided by co–researchers thoughts, perceptions and beliefs about learning how to use assistive technology products. The technology products were the physical objects related to those acts. Dialogue about the experience and its meaning was reflected upon by the co–researchers and by me. Seven researchers served as the primary instruments of data collection and interpretation. Reviewing the data relating to the results achieved, suggested an emerging substantive theory. The complex meanings built upon the basic experiences of the women suggested tentative relationships from the data.

Motivation for the pursuit of instrumental and expressive learning at home about the use of assistive technology for task performance and home modification was directly related to the co–researchers desire to live alone. A second, and equally important desire, was to continue to maintain lifelong, valued social roles. Despite varying levels of impairment, the co–researchers felt their motivation for learning to use the technology was attributable to their anticipation that skill mastery would lead to enhanced task performance abilities, as well as the reduction of physical energy expenditure and the corresponding loss of energy for participation in valued activities. Following the performance of self–care and limited home maintenance tasks, the co–researchers expected to have energies available for community interaction.

When they succeeded in achieving enhanced task performance abilities, their families felt more secure supporting their preference to live alone. Expecting that sufficient energies would become available to them, following completion of routine tasks of personal care using assistive technology, the co–researchers hoped to gain the
ability to resume valued social role participation. In reality, the women continued to experience significant levels of impairment, such as reduced stamina and limitations of balance, visual and other sensory impairments. However, they found that they were now psychologically ready to accept partial interdependence as part of a modified lifestyle repertoire. It seemed that the renewed sense of control, and feelings of enhanced chronic disease management skills, following the successful personal learning experience directed toward use of assistive technology products enabled them to accept the "trade off." Caregivers strong support, demonstrated by encouragement for parental participation in the experiential learning about assistive technology, culminated in the recognition that the older adults' ability to live alone had actually been strengthened. Indeed, the caregivers' statements to me acknowledging minimization of their caregiving burden, further encouraged their aging parents.

Self-care health behaviors which increased among the co-researchers following completion of their learning experiences included: (a) adaptations in response to declining physical/cognitive function, (b) practices that can be described as constituting elements of a healthier lifestyle for older adults, and (c) improved medical self-care (self-treatment, and monitoring of common symptoms). Individual health behavior change seemed more achievable once the co-researchers' sense of autonomy or personal control had been renewed. The co-researchers recognized that the most difficult health behavior modification—acceptance of partial interdependence—became possible after they had learned how to use selected assistive technology products. They were surprised to note that attitude modification became possible once they gained an
increased sense of control over chronic disease management. They felt a willingness to tolerate increased family/friend dependence, despite the admission of some disappointment that personal stamina levels had not increased following consistent use of assistive technology products. Acceptance appeared tolerable because they sensed that for now it was the only way they could resume active involvement in valued social roles.

The implications of this study suggest that learning for these six older women did have positive outcomes that were evidenced by the major health behavior modification which transpired. It has been earlier noted that it was not the intent of this study to discover universal truths, nor to make predictions that hold true over time, nor that results could be generalized outside the selective sample, but instead the study explicated learning contexts for the growing number of older women. It is expected that other older women, or men, may not recognize the benefits of learning as clearly as these women.

The co–researcher's perception, that learning was a strategy through which they could improve management of their chronic disease, facilitated acquisition of a renewed sense of control for them. Increased autonomy, a highly valued attribute, further facilitated individual acceptance of partial interdependence on their informal support network. After completing their individual learning experiences, co–researchers found themselves able to resume social role participation, thereby increasing opportunities to contribute to the larger community in an altruistic manner as in earlier life periods. In peer education sessions, co–researchers demonstrated their new knowledge about assistive technology, and described increased personal feelings of social connectedness.
Findings from this phenomenological study hold critical significance for research and practice in the area of adult preventive health education, such as disability and injury prevention programs. Emphasis on prevention has clearly become a cornerstone of the evolving managed care health and social services delivery systems. As can be expected, this study raised many questions, such as:

1. What cost reductions could be achieved in community-based service delivery of health and social services with inclusion of experiential learning options for older adults to learn to use assistive technology in task performance and home modification?

2. How can health educators and family caregivers better address the older adults' critical need for sustaining autonomy and quality of life despite incremental decline in health status and changing social roles?

3. What type of community adult health education program might prepare frail older adults for easier acceptance of informal support from family/friends, minimize loss of self-esteem and facilitate interdependence?

4. How can peer education be better and more widely utilized through community programs that introduce the use of assistive technology?

The co-researchers recognized that specific assistive technology products could compensate for limitations, heightening awareness of the negative impact created by excess demands existing for task performance in the home and work setting. Upon hearing that residential building codes were earlier formulated, according to the needs of 6-foot tall, right-handed men, the women understood why their homes were clearly ill suited for current needs. The co-researchers noted from daily experiences those task
demands that had previously caused considerable difficulty, such as ability to open
doors, turn faucet handles and appliance knobs, use keys, remove staples, and handle
tools for bathing and food preparation. The activities became easier after they learned
the use of assistive technology products. Health behavior modification was perceived
when tasks actually became "do-able" and led to their attitude change, enabling them to
tolerate increased support from family and friends. The co–researchers then found it
possible to renew pursuit of valued lifelong social roles. Clearly, older adult education
made an invaluable contribution in the co–researchers' daily lives. Family members
expressed feelings that caregiver burden was lessened as a result of the education
offered their older relatives.

While this study looked at the complex meanings for older women when
learning to use assistive technology at home, it became abundantly clear that there was
critical need to heighten awareness of the risks which environments pose for all older
adults. The elderly have limited understanding about how to evaluate personal housing
and assistive technology needs. Environments that are poorly designed severely limit
independence for routine task performance. Extended research is needed that further
explores the complex meanings of learning to use assistive technology for all others
among aging populations, such as men, middle–aged children who provide informal
support to aging parents, and multi–ethnic and culturally diverse groups in the middle
and older adult populations.

This phenomenological inquiry "opened the door" by increasing the
understanding of the learning experiences of older women between the ages of 65–85
years of age. Daily existence, described in considerable detail in protocols (see Appendix), reflected struggles with routine chores at home in order to maintain social roles that continued to give the women their reason for being. Through perusal of co-researcher dialogue, readers are able to better grasp what it meant for these women to wrestle daily with physical and/or cognitive losses, as they inched forward along their chosen pathways into their later years. Review of descriptions about struggles to enhance abilities and maintain social roles, introduces real world situations for these women through interpretations of the existential meanings.

The co-researchers described learning as the strategy that they used throughout their adult years for adjusting to change. In their later years learning was viewed as an option facilitating better management of increasing limitations from their respective chronic diseases. Through situational learning, they sought to acquire new solutions that might help them overcome daily barriers met with declining abilities for task performance. Valuing continued community involvement, the co-researchers sought opportunities to give informal support to friends more limited than they.

The reader is reminded that the co-researchers' daily experiences must not be considered in isolation. Rather they must be viewed as one aspect of the rapidly changing and extremely complex and fragmented community-based health and social service delivery system which surrounds these women. Costs for health and social services delivery have become a private and third party reimbursement nightmare. Most communities are struggling to adjust to an imposed, managed care approach to older adult services delivery.
While directing considerable effort to reducing the high costs of health and social services delivery, communities have not yet fully recognized the positive impact which preventive health care education would provide older adults. Expectations are that emerging community-based services delivery system will demand response to co-researchers' implied questions, such as where can the older woman learn how to age more successfully within her own home? Older women consistently described their need to learn how to use assistive technology for task performance and home modification.

Despite multiple physical and cognitive changes which turned routine daily chores into exhausting experiences, quality of life continued to be highly valued by these older women. Family support provided encouragement to aging relatives in order that they were better able to sustain autonomy. Individual descriptions and the fundamental description clarified the learning process and the meaning it held for enhancing autonomy by older adults and their informal support networks.

Limitations of This Study

Clearly, the focus of this phenomenological inquiry responded to research gaps of significance, earlier cited, which would put a more human face on the experience of older women striving to continue living alone, despite difficulties performing daily tasks. Indeed, human science researchers have increasingly noted the abysmal lack of awareness about the real life world of the woman 65 years or older. Despite the obvious need for this study, the focus on this inquiry, the older caucasian, 65–85 years of age and living alone, may be viewed by some as a limitation. It is well known that
the lifespan has been extended for both women and men. And obviously, this lifespan extension includes men and women from culturally diverse, ethnic minority populations as well. Therefore, we must recognize and respond quickly to the critical need to heighten awareness of the risks which home environments pose for all older persons.

It is generally recognized that many among the adult population have limited understanding about how to determine assistive technology needs and personal housing needs. This information is sorely needed by those among the rapidly escalating numbers of older adults who indicate their preference to remain as long as possible in their home of choice. Education about the benefits of technology in task performance and home modification could minimize caregiver burden, so it is also of value to middle-aged children, those in the "sandwich generation" who provide informal support caring for their aging parents while parenting their own children. Environments which are poorly designed severely limit independence for routine task performance. Extended research is needed which further explores the complex meanings of learning to use assistive technology for men and women among the multi-ethnic and culturally diverse groups in those middle and older adult years.

Another limitation worthy of mention is the fact that this phenomenological inquiry used a selective sampling approach to identify co-researchers. Defined in the text, *Qualitative Analysis for Social Scientists* (Straus, 1987, p. 39), this technique relies on the decision made prior to the study to sample a specific location, or type of participant. In this study, the dimensions of time, location, space, gender and activities participation were specific criteria. Older women, between the ages of 65–85 years, living
alone yet experiencing functional limitations in task performance, were invited to serve as co–researchers. The women were aware they would be expected to attend an introductory session about assistive technology to be offered at the local Senior Center and the Senior Housing complex. And finally, they had to commit the required amount of interview, tape recording and phone conversation time to serve as a co–researcher for this study.

**Relationship of This Study to Previous Research**

This phenomenological study provided considerable support for earlier cited research in adult learning (see Chapter II). Co–researcher comments offered support for Lindeman's (1961) description of learning as a process occurring throughout the entire lifespan with its purpose to "put meaning into the whole of life" (p. 5). Betty clearly described how the process of learning has continued to put meaning into her daily world across her entire lifespan. During her formal learning experiences in grade school, high school and college, and continuing after marriage and increasing in importance as she began raising her family, extended into her later years as she struggled to find solutions that allowed her to continue contributing to her community in multiple volunteer capacities. Despite severe cardiovascular deficits reducing energy capacities for routine daily chores, she realized that her various social roles continued to define her sense of who she has been and what she still prefers to be. Comments by Dorothy described learning strategies applied in her early and middle adult years as she moved into managerial and administration roles in her business career. She recognizes that her self–esteem is made stronger today when she can still volunteer as facilitator at the local
senior center, continuing to rely on learning as a strategy that will enable her to better manage chronic diabetes.

The study further expands the understanding of Knowles' (1985) widely recognized adult learning orientations, i.e., self-direction, influences of social roles, and the immediate application of learning, as a reason for engaging in goal-directed learning. Eloise, consistently plagued by arthritic pain, found she was even more eager for information that could assist with arthritis management. Upon introduction to new assistive products, following immediate application of learning through practice at home, she mastered their use and could demonstrate to her peers. Clearly, she recognized a sense of renewed self-direction, consistently finding herself able to resume valued roles, such as mother, student, community volunteer, and friend.

This study offers further application of Londoner's (1985) framework that suggests that motivation for learning and participation in learning enhancement is closely related to social psychological needs, an existing social system, and goals of an immediate nature or expressive learning, as well as those with an expectation of future gain or instrumental learning. Catherine's changing diabetic limitations such as severe vision loss and decreased sensation in hands and feet motivated her learning participation. She attended the apartments' public health education classes because she valued independent management of daily needs. Through her apartment friend network, she volunteered to help neighbors who had greater physical losses. Her strong spiritual and religious involvement reflected a lifelong interest. Determined to continue participation, she found small group activities were made easier through specific
technology, i.e., multiple channel tape recorder borrowed by the therapist through the local public library.

The study strongly extends Dychtwald and Flower (1989) and Moody's (1985) identification of increasing numbers among retired populations participating in adult learning because of their expressed interest in pursuing a productive use of leisure time. Productive use of leisure time was found to be an integral component of sustaining social roles by each of the six co-researchers. Through peer demonstration of product usage they shared the assistive technology information with friends who were unaware that these products existed.

Stearn et al. (1992) research proposed that late life learners place high value on maintaining functional effectiveness and improvement of life quality. Clearly, this study supported Csikszentmihalyi's (1982) research findings, reflecting the challenge felt by co-researchers from successful daily task completion, and ability to resume social role participation has served an integrative function. The findings of this inquiry contribute to the recognition that the enhancement of skill level for task performance for older women held considerable meaning for them. Clearly, the six co-researchers' comments extended the application of these perspectives. Engaged in their valued life roles—mother, grandmother, sister, teacher, student, friend and volunteer—integration occurred and the older women experienced autonomy, and they sustained a valued life quality in their daily worlds. Further research is warranted in order to determine what that learning experience and its meaning might be among larger numbers of older adults.
Co-researchers' dialogue supported research earlier cited reflecting the influence of personal health attitudes upon pursuit of improved health behavior as described through the Health Belief Model (HBM) (Baker, Tinetti, Garrett, Gottschalk, Koch, Trainor, Klaus & Howowitz, 1992). Co-researchers felt they had regained a sense of autonomy and realized enhanced management capability to deal with task performance limitations resulting from chronic disease, reducing fear of complete dependence on others.

Reinforcement for Nagi's (1969; 1991) functional limitation framework from the rehabilitation and disability literature was offered by the co-researchers who consistently described their learning motivation in the context of better chronic disease management, as well as prevention of further functional decline. The women reported daily concern about preventing excessive dependency on others in the event that family members might decide that the parent had become incapable of living alone. They were motivated for task-focused learning because they saw this as the most appropriate way to apply newly learned survival techniques that enabled them to continue living alone in their chosen residence. Caregivers stated that the assistive technology learning experiences enhanced task performance abilities enabling their mother to continue living alone.

Further support was noted in the co-researchers dialogue for Kielhofner & Burke's (1980) framework of human occupation from the occupational therapy and rehabilitation literature. Demands in each household existed that were implicit and explicit from physical and social components in the co-researchers home environments. Previously, personal appraisal of task performance competency was described by the co-researchers according to her particular disability. It is significant to note the dramatic
health belief modification that occurred in this study. Through learning about the existence of excess task demands created by external influences, i.e., tool choice and the built environment, co–researchers expressed increased motivation to continue learning about the use of existing and emerging assistive technology in task performance and home modification.

Finally, Holm and Roger's (1991) ecological model of task performance received further reinforcement. The co–researchers' recognized, through learning applications occurring at home, that the interaction between personal abilities, tool dimensions and design, and structures in their physical surroundings, determined the successful completion of daily task performance. Effective application of proven rehabilitation strategies with older women through introduction to assistive technology products was successfully achieved, facilitating more successful task performance at home. Family, members of informal support networks, noted increased competencies in the older women and stated they felt their caregiver responsibilities lessened. The co–researchers consistently reported increased independence. Achieving successful aging in place and extension of the option to live alone with safety and security was, in each case, a major personal learning objective.

This phenomenological inquiry clearly extended the literature base in late life adult learning. Studies where older women served as co–researchers for phenomenological research in adult learning or rehabilitation education about assistive technology were not found in the extensive literature review completed for this study. Interpretation of older learners' dialogue clarified the individual realities in the lived
worlds of these six older women, co−researchers, highly motivated to learn techniques that might enable them to continue living alone, and to pursue valued social roles. Increased understanding of their late life learning experiences was achieved through reflection on descriptions of situational learning. Achievement of skill mastery with products introduced compensatory techniques to cope with escalating task performance limitations. Motivation for individual learning climbed in an effort to reduce personal dependencies. The women's strong preferences to continue living alone, and their interest in renewing participation in valued lifelong social roles played a major influence as well.

**Implications for Future Research**

Research results in adult education reviewed for this study were broadly based and included readings in adult education, educational gerontology, patient education in geriatric rehabilitation and public health education. Among the major questions that arose related to this research topic, let us examine in detail a few selected areas inviting investigation. There is a wide range of low− and medium−technology innovations (i.e., 18,000 products that are identified on the computerized database, Hyper−Able Data) which already exist to address limitations of activity performance. Most of these products were originally designed for younger persons. Do they match the needs of older adults?

In this study, co−researchers carefully described specific characteristics of products that were unsatisfactory to older women who were new users of these assistive technology products. One major issue raised by co−researchers was that the selected features of the design of the various devices generally met only one functional
limitation, such as poor grip strength which is what one might find among younger populations. Their preference was for a product that responded to multiple sensory and motor problems that are more typical for chronic diseases affecting older adults. Co-researcher statements indicated that current design limited the usefulness of existing products for their particular age groups. Indeed, these feelings were of such import that co-researchers are engaged in bringing the issue of redesign to the attention of the product manufacturers, selected members of the group plan to contact the various manufacturing firms.

A second major concern noted by the co-researchers was that written directions on the use of the product were extremely confusing. Indeed, many products are currently manufactured in foreign countries and often written information is impossible to understand by the product user. Clearly, consultation with manufacturers is warranted by health educators in order to advise them of literacy levels among general and/or minimally cognitively impaired adult learner populations. The issue that begs further research is what strategies might best move us beyond current barriers that exist in the diffusion of learning about these products and household adaptations?

Additional barriers recognized and described by co-researchers were significant. The critical lack of awareness and information about the existence of assistive technology products by older consumers, as well as those who coordinate aging services provision, was noted. The existing distribution system for assistive technology products was described as seriously flawed. There are few retail outlets where items can be readily purchased. The majority of purchase by consumers occurs through a mail order
catalog system or directly through a rehabilitation professional, such as the occupational therapist. There is a lack of awareness of aging service and other health care providers about the usefulness of assistive technology in reducing task performance and home environmental demands for persons with impairment or disability. There is a critical need to address basic affordability issues of assistive technology through identifying better reimbursement mechanisms. Finally, there is an imminent need to create more appropriately designed products for older consumers.

It is worth noting that during the course of this phenomenological study, activities related to research gaps and practice needs are being addressed nationally and internationally. These contributions are of considerable significance and bear emphasis because they will have dramatic influence on service delivery of assistive technology to older adults.

Indeed, the results of the study suggested further need to gather critical data on the use of assistive technology at home by those with lifelong disabilities, those with late life acquired disabilities, as well as those underserved populations among ethnic minority older adult groups. Newly funded studies have recently begun addressing these issues among multi-ethnic and culturally diverse populations. Journal and conference reports in 1993 indicated sizeable amounts of federal funding, had been awarded to four innovative, broadly focused, national research and education programs for older adult consumers. Those monies set in motion research for obtaining longitudinal outcomes data in the area of education needed for promoting increased use by older adults in task performance and home modification.
In one major study the National Institute on Aging (NIA) funded a three-year exploration of health prevention education for older adults at several Los Angeles community centers serving multi-ethnic populations. The programs included learning about the use of assistive technology in task performance and home environment modification, and stressed the importance of regular exercise to enhance strength and flexibility. Populations offered these education programs were participants at local senior center programs. Instructors were students at the School of Occupational Therapy, University of Southern California.

In another case, the National Institute on Disability Rehabilitation Research (NIDRR), part of the United States Department of Education awarded monies to two Rehabilitation Engineering Research Centers (RERC). Each center implemented consumer education research and community programs addressing the usefulness of assistive technology and home accessibility modification. Longitudinal research has been initiated which will document current demographic information on persons with existing disabilities regarding their use of assistive technology and identify changing needs as they grow older. Finally, the United States Department of Health and Human Services' Administration on Aging awarded research monies to study potential reimbursement mechanisms for home modification and the purchase of assistive technology through the National Policy and Resource Center on Housing and Supportive Services at the University of Southern California's Andrus Gerontology Center.

Clearly, this tremendous investment of federal monies within the United States offers further recognition of growing awareness of the increasingly critical need for
introducing and increasing access to assistive technology and home modification
information to well elderly persons through community education. It is expected that
outcome data generated by these research studies will be useful in identifying the most
appropriate learning strategies that will facilitate rapid mastery of product use at home.
It raises expectations that the rapidly escalating demand for increased access to education
about assistive technology products and accessible housing products might improve.

**Significance of the Study on Adult Health Education Practice**

Evidence of the implications that this study might have on changing adult health
education practice was strongly reinforced during the co–researcher dialogue
transcription process of this phenomenological inquiry. This inquiry sought to answer
the question: What was the experience of older women learning to use assistive
technology at home and what is the meaning of the experience? Findings showed that
co–researchers recognized a reduction in excess demands encountered during task
performance through choice of a more appropriate tool and as a result of more
appropriately designed home surroundings.

The co–researchers indicated that learning offered them a strategy for improved
chronic disease management. Through skill mastery in the use of assistive technology,
ye anticipated increased ability to accommodate to changing physical and cognitive
performance. Through recognition of instrumental and expressive learning goals of
older women, this study contributed to our understanding of why they were motivated to
learn, as well as how learning contributed to the older women's sense of personal
effectiveness despite serious chronic disease limitations.

The co-researchers demonstrated agreement in multiple dialogues about two
overarching issues: (a) their preference to continue living alone, and (b) their need to
sustain participation in social roles that had long been significant in their lives. These
included the roles of mother, grandmother, sister, friend, volunteer, teacher and student.
Each woman described feelings of dwindling self-esteem whenever new limitations
arose as a result of changing physical and/or cognitive profiles. Despite increasing
numbers of losses, the women gave no indication of role abandonment, but rather they
showed an increased awareness of the need for and willingness to modify their roles.
Indeed, co-researchers recognized that these life roles still provided them with core
"reasons for being" which continued to enhance their quality of life.

The findings of the study also hold significance for adult health educators' need
to become more aware of changing demographic profiles. Clearly, that information
indicates an escalating demand for and need to create easier access to assistive
technology education as a direct result of the increasing numbers of older adults.
Reauthorization of the Technology Act for Persons With Disabilities (Public Law 100–
147 or Tech Act) in 1994 unleashed tremendous potential for community education in
the use of assistive technology. Improved wording inserted during revision of the
legislation opens new windows of opportunity that are expected to facilitate community
outreach to "underserved populations," such as multi-ethnic and culturally diverse
minority populations.
In early 1995 Congressional discussions aimed at balancing the national budget, are expected to reduce proposed funding levels. Nevertheless, it still seems likely that through collaborative and interdisciplinary efforts, projects recently initiated may still be achieved. Federally funded state technical assistance programs that hold a mandate to educate the public about assistive technology are now firmly established in 50 states. In 1994, the New Mexico State Technology Assistance Program (NMTAP) implemented education that targeted rural Hispanic and Native American communities. In another example, funds awarded through the United States Department of Health and Human Services' Administration on Aging to the American Society on Aging in late 1994 facilitated replication of two highly successful older adult consumer education programs. Both programs included strong involvement by staff of Maryland's State Tech Assistance program. The first, OPERATION INDEPENDENCE, sponsored by the State Office and the Howard County Office on Aging, Columbia, Maryland, and the second program, SENIOR TECH, sponsored by the Capitol Area Easter Seal Society initiated training for Area Agencies on Aging staff in rural and suburban communities. And yet another example, funds received in 1994 by the SUNY Buffalo Rehabilitation Engineering Research Center, have been used to provide technical assistance to diverse cultural populations in America and in South America. Funding has spawned production and broad dissemination of English, Spanish, Portuguese, and Japanese language materials for services providers and consumers related to understanding and promoting the use of assistive technology.
Finally, the lack of published materials useful for educating older adults about the use of assistive technology in task performance and home modification is widely recognized. Recently, a few universities and private publishing companies indicated publications are being developed which should reduce gaps existing in currently available teaching materials. For example, the American Association of Retired Persons (AARP), with a membership of 33 million persons over 50 years of age, is updating their manual, *The Gadget Book*. AARP is also producing a video packet that highlights the basis benefits of assistive technology for task performance and home modification. The American Occupational Therapy Foundation in collaboration with staff at the Center for Universal Design, are producing an educational video package that describes the comprehensive process of incorporating assistive technology into task performance and home modification.

On the international scene, following initiation of this phenomenological research study, results of other related studies underway in the European Union through the Technology Initiative for the Disabled and the Elderly (TIDE) were reported at national and international conferences. These contacts gave further evidence of the implication that this study held for ongoing and future research. Personal dialogue with researchers during discussions at conferences in Tokyo and London in 1994, raised discussion of how to increase information sharing about assistive technology research in process. For example, one TIDE study, Usability Requirements Elaboration for Rehabilitation Technology (USER), includes engineers, therapists and ergonomists from 13 European countries. The International Corresponding Committee for this study will focus on implementing
strategies directed toward improving the usability and acceptability of assistive and rehabilitation technology through inclusion of end users in initial product design.

Clearly, the issue addressed in this small phenomenological inquiry is indeed a phenomenon of considerable global concern. Aging of world populations demands increased action in both developing and developed countries. At conferences occurring in 1994 and 1995 adult health educators, gerontologists, and researchers have shared information about innovative programs that proactively respond to the recognized need for education about assistive technology. Reflective of the escalating global attention directed toward health promotion, disability and injury prevention education, one need only review conference themes to recognize how frequently they are directed toward reducing barriers and promoting access to information on home modification and assistive technology.

Summary

This phenomenological research study increased the limited understanding of how the older woman learns to use assistive technology through listening to their lived world experiences. Looking through that window into their individual realities, perspectives were shared which contributed to and expanded the knowledge base about the process of learning in late life and how older women learn to cope with functional limitations in daily task performance.

Six older women between the ages of 65–85 years volunteered as co–researchers in this phenomenological inquiry which explored older women's experiences learning to
use assistive technology at home and the meaning of that experience. Transcriptions of tape-recorded interviews captured the complex meanings of their daily experiences during the process of learning to use assistive technology at home. Two overarching preferences expressed by the women were their desire to continue living alone, and their need to regularly participate in lifelong, valued social roles. These women viewed learning as a strategy through which they could master skills allowing better management of chronic disease limitations, and enabling them to continue living alone, and to contribute to their communities.

Clearly, the co-researchers in this phenomenological inquiry recognized the value for older women with impairments to have up-to-date information on assistive devices for task performance and home modifications. Information that seemed to have the greatest value was that which helped them to evaluate their own needs and raised their awareness of the impact that the home environment has on sustaining independence. It was important that the information was user friendly, accessible and became more widely disseminated. Co-researchers demonstrated skill mastery in product use that minimized limitations attributed to their various chronic illness, such as: arthritis, cancer/post mastectomy, cardiac and circulatory insufficiency, diabetes, osteoporosis, and orthopedic trauma. Following at home learning experiences, these women realized that the home setting itself had a direct influence on individual competency for task performance. Objects used in task performance, such as handles of food preparation or eating utensil handles, or cabinet/door hardware were critically significant as far as tool design and tool dimensions. Components of the built
environment (e.g., shelf, work counter and chair heights, door handle shape and door
threshold height, and sink counter height or sink faucet handle shape) could minimize
task performance limitations influenced by physical abilities or cognitive change.

In response to the dramatic demographic shift around the globe among aging
populations, the study described two major adult education issues that appear to be
gaining attention in the United States, countries in the European Community and in
Japan. First, there is a growing need for older adults faced with chronic disease and
concomitant limitations in task performance to learn how to use assistive technology
through community, preventive health education programs. Of equal importance is the
critical need for older adults to be involved in the design and redesign of everyday
products in order to enhance the quality of life to their later years through facilitating
sustained social role participation.

Drawing from the emergent and developing groundwork evident in the findings
of this study, more fruitful educational interventions for older adults and the broad
spectrum of adult health educators, including occupational therapists, can be realistically
and more appropriately developed. Adult health educators will need to expand program
goals in emerging community programs which emphasize prevention, designed for these
rapidly escalating aging populations. Experiential health education will need to
encompass broad rehabilitation education goals, such as: promoting independence,
assuring productivity that enables the older adult to sustain social roles that lend
meaning, add quality to their years in late life, facilitating continuing community
integration.
In the book, Disability in America: Toward a National Agenda for Prevention, the Committee on a National Agenda for Prevention of Disabilities (Pope & Tarlov, 1991) encouraged facilitation of information dissemination as a critical solution through which America might facilitate continued productive activities' pursuit within older adult home settings, thereby enhancing lifespan growth and development. Ancillary benefits realized through this phenomenological inquiry included: (a) facilitation of learning by older adult peers through instruction given by co–researchers offering contextual based instruction, (b) the importance recognized by co–researchers for psychosocial readiness through recognition of personal learning goals (i.e., living alone, managing chronic disease), (c) provision of research contribution opportunities for older women paving the way for improved integration of the impaired elderly into their communities, (d) heightening awareness of older adult, health educators, and aging services providers of the role played by both task and home environment in limiting or enhancing functional abilities of the older adult, (e) description of an innovative, successful, easily replicated, educational framework that incorporates flexible learning opportunities to accommodate older adult preferences, and (f) recognition that this empowering approach to older adult peer learning enabled ongoing participation in valued, lifelong social roles. Clearly, preventive health education options that emphasize introduction to assistive technology for improved task performance and direct attention toward barrier reduction in the home can pave the way for the development and implementation of more useful learning opportunities for older adults. Quality of life in the later years could be enhanced for the rapidly growing number of older adults.
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APPENDIX A

LETTER OF CONSENT

I, ____________________________, agree to participate in Anne Morris's study of the experience of learning to use assistive technology at home. The purpose of this research is to develop an in–depth understanding of the experience of using assistive technology at home and the meaning of this experience.

I understand that my role in the study will consist of no more than four, one hour taped interviews, conducted by the researcher and where I will participate as co–researcher. These will be held at mutually agreed upon times in my home or at the senior center. I will be asked to report and explore with the researcher on my experiences of learning to use assistive technology at home. In addition, I agree to record written comments each day for a one week period from the researcher. In the interviews and in the commentaries, I will be asked to report on and discuss my feelings about the continuing experience of learning to use assistive technology at home and the meaning of that experience.

Only my first name will be used in the transcriptions by the researcher in the data which is given to members of the dissertation committee or disseminated in any form. I also understand that my surname will not appear anywhere in the study. The taped interview will be left intact and kept in confidence by the researcher, unless I specifically request that my tapes be destroyed.

I understand that I may withdraw from the study at any time.

Signature _______________________________

Date _________________________________
## APPENDIX B

### PHENOMENOLOGICAL PROCESS OUTLINE

<table>
<thead>
<tr>
<th>CO-RESEARCHER</th>
<th>RESEARCHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Select assistive technology device to take home.</td>
<td></td>
</tr>
<tr>
<td>2. Day one, co-researcher, written entries.</td>
<td>Researcher.interview</td>
</tr>
<tr>
<td>4. &quot; three, &quot;</td>
<td></td>
</tr>
<tr>
<td>5. &quot; four, &quot;</td>
<td></td>
</tr>
<tr>
<td>6. &quot; five, &quot;</td>
<td></td>
</tr>
<tr>
<td>7. &quot; six, &quot;</td>
<td>Pick up daily log, deliver transcription; review with co-researcher. Dvlp Indv.Dscptn.Mail</td>
</tr>
<tr>
<td>8. &quot; seven, &quot;</td>
<td></td>
</tr>
</tbody>
</table>

9. Validate description for researcher. Return by mail to researcher.

10. Validate fundamental description. Return by mail to researcher.

11. Closing interview w/co-researcher.
APPENDIX C

LETTER ACCOMPANYING INDIVIDUAL DESCRIPTION

Date
Name
Address
City

Dear Co-Researcher/Name,

Thank you for agreeing to help me with my dissertation. I appreciated your willingness to participate in the three hour long interviews which we recorded on tape. It was very important for you to be consistent in making daily, written comments during the past two weeks. I trust you feel that the transcript editing for both the interview and the audio-log tapes captured your perspective.

I am now at the second stage. I have analyzed your transcript and written a short description of what I feel are the major points of your learning experience. Would you please read this individual description and give your comments about it? I would like you to verify that this is a description of your experience. If you think I have missed something or emphasized a wrong idea, please let me know.

I shall call by phone to discuss it, or to arrange an appointment when we might meet in person when you have finished reviewing the transcript. If you have any suggestions for the description feel free to share them with me. I want these few pages to accurately reflect your experience of learning to use assistive technology at home. I look forward to talking with you very soon.

When you and the other co-researchers have returned the descriptions I will develop and write the fundamental description of the experience which will be an general description of your shared experiences learning to use assistive technology. I will ask you to comment on this fundamental description, also. As soon as it is completed I will mail it to you for your review. I shall call to arrange an appointment for our final interview. Thank you for your continued assistance.

Sincerely yours,

Anne Morris
(703) 425–6399
APPENDIX D

LETTER ACCOMPANYING FUNDAMENTAL DESCRIPTION

Date
Name
Street
City

Dear Co-Researcher/Name,

The fundamental description of learning to use assistive technology at home has now been completed. Your copy is enclosed with this letter. Your interviews and daily log recordings and those of the other four co-researchers provided a wealth of useful material from which I was able to identify the common themes of this learning experience.

Please read the description thoughtfully and see if your personal learning to use assistive technology at home experience fits this description. Since this is a general description I don't imagine that it will be an exact match, point for point. I would like to know your reaction to this description. I would surely welcome any additional comments about the description which you are willing to share with me.

I shall call you by phone so we might discuss the fundamental description then or arrange to meet face to face. I have also enclosed a stamped, self-addressed envelope for its return. I look forward to receiving your comments by______________.

I will consider this description a success, if in reading it you say, "Oh yes, that's was my experience learning to use assistive technology at home." I would hope that after reading it you also have a greater understanding of the experience of learning to use assistive technology. We can discuss this at length when I visit you for our third and final interview.

Thank you so very much for your thoughtful assistance with this research. I could not have done the study without your complete cooperation and willingness to freely share your time and learning experience.

Sincerely yours,

Anne Morris
(703)425-6399
APPENDIX E

BETTY'S PROTOCOL

Researcher (R): I'M INTERESTED IN A DESCRIPTION OF YOUR DAILY WORLD, BETTY. WHAT DO YOU DO AT HOME EACH DAY? WHERE IN THE COMMUNITY DO YOU GO WHEN YOU LEAVE THE HOUSE?

Co-researcher (C): My typical daily routine at home and at meeting places is becoming increasingly hard to maintain. My daughter, or another member of her family, speaks with me daily by phone. In my house, I must live only on the first floor because I feel I can safely move about in the kitchen, living room, master bedroom and bath. I really hoped I'd find someone to share the house with who'd live upstairs in the second bedroom and bath. That person could provide me with companionship, and offer consistent help available for all those increasingly difficult household management chores.

A year ago a college student moved in expecting to share my home but unfortunately, it just didn't work out. I quickly found that sharing the kitchen with a complete stranger wasn't comfortable for me after living alone so many years. I hated to do it but I had to ask the new housemate to find another person willing to share her home.

My personal care routine follows a pretty typical pattern. I face multiple challenges—some days more so than others, with toileting, bathing, grooming, dressing, transfer, mobility, cooking and eating. In the area of home management, I don't do much these days at all. I don't find that too limiting though because I'm a relatively neat & tidy person. There's not much really which seems to out of place. I guess the clutter on surfaces might be the first thing a visitor to the house would notice.

Getting outside in the community, it's usually to go shopping, to a doctor's appointment; or to the neighborhood Community Senior Center, the Church, and or the Garden Club. It's much more energy consuming so I restrict my activities to the necessities. I plan my days so that I can continue to participate in community activities. I've long believed that as a local citizen, I owe the community where my home is located a share of my time.
There are various social roles from which derive a strong sense of who I am. These include being a mother, grandmother, great grandmother, friend, teacher and student. Although my physical capacities have changed, my long term life goals have not. I've long felt that to be my "reason for being". It continues to be self-improvement for me and others, too. Facilitation of educational programs is a way I try to contribute to increasing the availability of adult learning in the community.

R: DO HEALTH PROBLEMS LIMIT SPECIFIC DAILY ACTIVITIES, I.E., PERSONAL CARE AND OR HOME MANAGEMENT CHORES?

C: Completing regular daily tasks of self-care, i.e., toileting, bathing, grooming, dressing, transfer, eating and moving around the first floor of my town house is beginning to become too tiring for me. I feel tired before I even go out the door to get to any of my meetings. Sometimes, I think to myself that I don't really know myself. Who have I become? I'm just not the same person I used to be. All these many physical changes through the years have begun to take a real toll. Routine living is becoming too hard for me to deal with. Taking care of myself seems to demand all the energy I have. Forget about keeping house, tending indoor plants and the small flower garden, I have to let them take care of themselves.

Calling to arrange my transportation takes tremendous amounts of energy just to get myself to meetings and appointments. And shopping, well that just takes too much energy-- more than I can readily muster. My grand-daughter has begun to help me with that. I realize I could give up community activities, but those encompass my favorite reason for being. I am a social individual, I like being with others and assisting with teaching, engaging in personal learning and helping others to solve problems. Those activities are what's still fun in my life.

"reason for being"

Goals: self-improvement, increase adult education opportunities.

Daily self-care "too tiring".

Do I know myself?

Who have I become?

Housekeeping, gardening, too much.

Transportation takes all my energy.
Lately, I find myself spending considerable time weighing the benefits and trade-offs of moving to a continuing care community (CCC) could mean for me. Moving to a CCC, I could have help I need with personal care, home management, and still have energy to spare for volunteering. I've already found one continuing care retirement community with multiple levels of care about two hours away from here which sounds really inviting to me. A friend of mine took me to visit and I found the residents and staff there were really friendly. I worry all the time about what could happen to me next time I fall down inside the house?

When I fell a few months ago, I didn't get hurt thank goodness, just a few bumps and bruises. It did help me decide to finally buy that emergency call system which my children wanted me to get. It cost much more than I wanted to spend but the salesman convinced me to get it. Daily decision making has become a very major hassle for me. I've realized I'd like having someone else do it for me. I realize that if I actually decide to move, it should be while I still have sufficient energy available so I'll still be able to make new friends. The place I think I want to move is too far for my friends from this area to come for visits. My children have told me over and over again, they'll agree to whatever decision I make about moving to a more supportive environment.

R: TELL ME ABOUT STRATEGIES YOU'VE FOUND EFFECTIVE FOR SOLVING THE MULTIPLE CHALLENGES YOU HAVE WITH DAILY ACTIVITIES?

As far as strategies to cope with the specific health problems that really do limit my activities, I do have quite a few. The slight stroke I had a few years ago makes talking and even writing more difficult. My short term memory is poor, and I consistently have trouble finding just the right word. My friends are patient. I'm comfortable with this situation because I feel they all understand that if the word I choose seems awkward I've done the very best I can.

I even find it very hard to understand detailed written directions, like those which you get in very fine print with any new appliances. I just avoid that kind of reading. With new products I arrange immediately to get practical, visual demonstrations which are easier for me to understand.
Another effect that stroke had was to leave me with very poor standing balance, and I get dizzy more easily. I find it's hard to get in and out of the tub, my favorite chairs in the living room and even in and out of bed. For example the storage area in the kitchen is limited and items are stored way beyond my reach. My children bought me a step stool with a wide handle. I hold on to it for balance when I need to stretch for retrieving an item. Of course, my daughter already helped me rearrange the storage. In the kitchen and bath frequently used items are within easy reach. My family and I still worry a lot about me falling in the bathroom or kitchen where my activities usually involve frequent bending and reaching.

I also have some arthritis in the joints of my hands, shoulders, knees, hips and ankles. Of course that makes grasping, reaching, bending or stooping quite painful at times. You can see from the cane I have to use, walking outside the house, that my balance on uneven surfaces is especially poor. Inside my house, furniture pieces are placed appropriately so they provide support as I move from room to room. And yet, sometimes the closeness of that furniture becomes an obstacle in my path and makes it more dangerous to move about too hurriedly.

When I'm out and about in town, shopping or sightseeing, I know I should take the wheelchair (w/c). The fact that I can't drive anymore makes an even bigger problem for me. I'm totally dependent for others to pick me up and drive me to all my appointments and meetings. I spend many hours arranging my transportation to and from. It bothers me then to also ask a friend to lift the heavy w/c into the car as well as to have them push me around the shopping area.

Another change which directly effects both walking and independent wheelchair use is that I have marked vision loss. My hearing is mildly limited too. Finding my way around in new places is much more of a problem as a result. At home, seeing well with only one eye, I find I have trouble finding things which I've laid down on one surface or another. Guess I've saved too many things through these years, probable need to weed out all the clutter. My house always appears messy to visitors because I actually leave things out on top of a surface so I can save energy retrieving an item from its storage space. I try to minimize the frequency which I must walk across the room to get an item out of its storage space.
R: You've told me that your love of learning helped you to pick teaching as your career. Do you see reflections of this interest in learning across your lifespan?

Oh yes, not only do I continue to seek experiences which allow personal learning, I still get pleasure from creating opportunities for others to gain satisfaction from self-improvement. I've always had a very strong preference for engaging in learning activities led me to choose teaching as a career. At the time when completed a 4 year college program not many women went to college. I enjoyed teaching for quite a few years before and after I got married.

But then when we started our family, I left teaching to raise three children. Through the years, I organized my time so I created free time for that personal pleasure. I didn't ever want to forgo that satisfaction. For example, there were so many tasks to do about which I knew very little as a new parent. In that new role we needed to know all we could about taking care of infants, raising toddlers and providing them with the most healthful nutrition. I'd go to the library several times a week just to read all I could get my hands on.

My husband and I worked hard to get the kids interested in learning and going to college. We were proud that we got all three children finished high school, attended college away from home and graduated. They found good jobs, married and started families. Fortunately my husband's retirement annuity and my social security was adequate for me to live on. My husband's final illness occurred shortly after his retirement. After caring for him for five years at home, he needed to be placed in a nursing home. After three years there he passed away.

Over time I gradually increased my participation and focused on those same community service groups I'm enjoying now. In fact, I realized that through participating in these groups and contributing to their service projects, I created opportunities for personal learning. In addition, I generally had opportunities to teach others as well. Nowadays, the greatest pleasure I find is providing consistent leadership for the Senior Center Newcomer Support Group. I'm so thankful through transportation support from friends and family, I can still participate in learning and service activities with the Senior Center Arthritis Support Group.
the local Garden Club, the Cooperative Ministry and the Community Association.

R: HAVE YOU ALWAYS BEEN INTERESTED IN ELECTRONIC PRODUCTS AND REGULARLY INCLUDED THE USE OF ASSISTIVE TECHNOLOGY PRODUCTS, I.E., APPLIANCES, AT HOME?

I became much more aware of assistive technology products following my medical crisis soon after I've relocated here. The children and my grandchildren began suggesting new products which they felt might be energy saving and could be useful to me. The first new gadget they bought for me once I got out of the hospital was the microwave oven. Although the children demonstrated how to use it, even had me demonstrate for them to assure I really knew how, I still felt hesitant to use it on my own. They encouraged me to practice using it reminding me that over a few weeks I'd feel more comfortable using it. Of course, that was true. They seem to enjoy having these same products available for their use when they come to visit me.

The family's concern about reaching me daily and preferring a change to check on me by phone led them to introduce me to what I felt were business products, the cordless phone and the answering machine. I found these items much more difficult to learn how to use. They taught me through visual demonstration over and over again. They were all really most patient. I practiced at my own speed, over and over each day when they'd call me, they review the directions. I finally mastered those new skills as well.

Next they got me interested in trying a remote TV control. They needed to demonstrate this longer than the phone products. It really took me a while to catch on to, but now I wouldn't be without it. Latter that year, they followed that learning up with giving me a VCR. More recently they gave me a tape recorder so I could record my family history for the grandchildren. It's been much harder for me to learn how to use each of these products. Skill mastery of these complicated devices requires that I have more frequent practice if I really expect to retain it.
Right now neither the VCR nor the tape appear to be working. I'm waiting for one of my grand children to come over and take care of that problem. Whoever comes over first will take them out for repair. They're all so very patient with me and will carefully demonstrate again and again how to use them the item. I think they enjoy teaching and are interested in helping me to remain a lifelong learner. The biggest loss following my stroke has been the difficulty I continue to have reading and understanding directions. I find them too confusing. Visual demonstration and repeated application is needed so I can understand and grasp activities involving a lengthy series of sequential steps. It also takes me a longer time to feel comfortable using new product. I need to practice repeating the series of steps over and over, at my own pace. Combining the new task as part related routines which I am used to establishes a pattern for me. After that I begin to feel I know how to use the item. I am comfortable to demonstrate the process to another friend which reinforces my grasp of the new process. I prefer simple, low technology products.

The discussion at the Support Group about how older adults can better maintain independence certainly seemed to interest the whole group. I value the option to continue living alone despite the serious health risks I'm facing. It is my impression that others in the group hold that same feeling. Most of us feel that loss of personal abilities to be the sole cause for increasing dependence. Introducing that new information that our home surroundings and the type of tools we choose to do activities can directly influence my degree of independence gave me encouragement. It increased my motivation to try to learn more about assistive technology. Suggestions that we could reduce daily activities' demands which currently exceed our personal abilities was information we can share with other friends and our families.

During the group discussion it was really surprising to hear how many assistive products we already use each day. Most of us have used eyeglasses for years. A few have even become regular users of hearing aids, several use canes. All of us have a TV, radio, telephone with answering machines, washer/dryer for clothes and dishes, and a vacuum. Not one of us had ever heard of those small assistive products which the young occupational therapy students demonstrated. It was useful to be able to try these products, first, at the Center with our friends. The
opportunity to select one or more to take home for further practice on our own and with our daily scheduled activities allowed us to learn at our own speed.

I selected six items for trial at home. I fully expected they might save me energy or time and make tasks less frustrating to complete. Obviously this process of learning new information and applying it at home wasn't completely new to me since, as I mentioned earlier, it's similar to those other personal skill learning experiences I'd had with the multiple appliances my children recommended and purchased for me. I picked assistive products which seemed easiest for me to use and which minimized personal care problems I'd already begun to have. Even when the product came with complicated written directions I didn't read them but took advantage of the group and return demonstration opportunities instead.

The introductory group discussion we had at the Center, followed by the demonstration the students gave, heightened my interest in really trying to use these new products. It was important to have the opportunity for each person to try the product. Watching your good friends using the items helped reassure me that my understanding was similar to theirs. I was comfortable that I could use it correctly on my own.

Using that learning session to ask questions, and hearing others' people's questions which were so different from mine, helped me to understand much more information about the product in a shorter time. Then the fact that these were items which we couldn't find in our local stores made us look and listen much more closely. None of the items were very complex so no one seemed afraid to try it out. When I talked with my friends later, we agreed that the idea of learning about the product so we could comment to our friends, or make suggestions about the product design seemed worthwhile. I liked the feeling that my opinion could count in redesigning a more useful product. After all, if the item wasn't really made for use by people our age, would it even work? We could identify changes which might make it much more useful for us and others as well.
So I guess my primary interest in learning about assistive technology at home is task focused and goal oriented. I asked myself these questions. Could it make difficult tasks easier for me or save me time? Was the item comfortable to hold? Did I remember to use it when I was doing the activity? Could I afford it or would my family buy it for me?

One major objective I have is to find products which allow me to complete necessary activities, and still have energy to spare for spending time with friends out at a community meeting? My secondary objective is to identify items which might be useful for me in the future. I expect my physical limitations could increase, what solutions will I have to draw from for sustaining some degree of independence? Since I am looking into that group residence— the CCC, could any of these products be used there if I relocate? Another interest, I wanted to know about the new products in case they could help any of my friends. For example, my closest friend just had a very serious stroke. She at the local rehabilitation unit at the local nursing home. I wanted to see if some of these items could help her. If I was able to learn how to use it, I could describe it to her or show her how.

Products seemed worth learning about when they appeared usable despite physical and memory limitations. They appeared easy to learn how to use and included: a magnifying glass which hangs on a soft cord, suspending it from my neck leaving my hands free for holding the reading or sewing material; a sock stretching form which accommodates my difficulty in bending over to reach my foot and to pull hard enough to don the sock; and a jar opener which accommodates my very limited grip strength and difficulty opening various sized diameter lids. It seemed even though I have specific physical limits, I could still use these products with success. Learning how to use the product might allow me easier task completion, or I might find it possible to do some tasks I now avoid doing.
AGNES'S PROTOCOL

R: I'M INTERESTED IN A DESCRIPTION OF YOUR DAILY WORLD, AGNES. WHAT DO YOU DO AT HOME EACH DAY? WHERE IN THE COMMUNITY DO YOU GO WHEN YOU LEAVE THE HOUSE?

C: Four days a week my typical day includes slowly getting myself up and about at home alone in the apartment. Personal care activities take a much longer time for me these days, i.e., bathing, dressing, eating breakfast before I go over to the Center. Getting breakfast takes me much longer because I can't reach up to retrieve items from high or bend down to low shelves. Just getting my coat on before I go outside can take as long as fifteen or twenty minutes.

I'm really lucky the Center is over there. I just walk across two parking lots and I'm there. I'm sure for you that may seem close, but for me it really feels that it's miles away. First, I must climb the flight of eight steps up to the street level where the parking lot begins. Then I slowly work my way through the two parking areas, often leaning on every car I pass. I really can't trust my balance anymore. My feet don't give me accurate awareness of the safety of the ground I'm walking on, so I have to use my eyes to check the condition of the ground or floor surfaces.

On those days when I don't go to the Center, it takes all available energy to get to the grocery, beauty shop or cleaners at the nearby Mall. Those stores are way over at the opposite end of the parking lot. Because my stamina is so poor, I don't put many items in my wheeled cart. In fact, nowadays, my grand-daughter goes shopping with me once each month just pull the fully loaded cart for me.

On those days when I choose to take a shower instead of a sponge bath, I'm very unsteady climbing in/out of the tub. I could not get along without the bath bench and hand held shower which I now use regularly. After my mastectomy, in the hospital I noticed reaching up over my head was impossible on that side. The nurse at my doctor's office suggested to my son that he get me these two items. At first, I absolutely refused to use them. You know, I said to him I never thought I'd come down to needing things like this.
Each member of my family was worried and so was I. I was really depressed for many, many weeks. I thought they'd tell me I had to go to a nursing home for sure. My son's wife and my grand-children all talked to me very seriously. They agreed that they too wanted me to try living on my own once again. However, they made it clear to me that they wouldn't feel I was safe enough unless I agreed to use these solutions. They've always said I could move in with them anytime. But you know, I'm not ready for that yet. I want to put that off as long as possible. I decided it was important to me to maintain independence so I've practiced faithfully, everyday using the hand held shower and bath bench.

Sure enough, I soon realized it wasn't so hard to sit down to take a shower. It was just a case of breaking an old habit and learning a new approach to this daily routine of showering. You know now I don't know how I ever did it any other way. Before I was at the mercy of the water streaming down over my head. Now I aim the water stream where I want it. At the end of the shower, I'm not exhausted because since I'm sitting down throughout the lengthy process, I use less energy for that activity.

And then no sooner had I almost adjusted to the mastectomy experience than I was diagnosed with late life diabetes. I was depressed once again. But the nurse worked closely with me at my doctor's office and taught me how to give myself the insulin shot.

R: DO HEALTH PROBLEMS LIMIT SPECIFIC DAILY ACTIVITIES, BESIDES PERSONAL CARE, WHAT ABOUT OTHER HOME MANAGEMENT CHORES?

C: Obviously, after the mastectomy limited reach began to limit my abilities in bathing, dressing, grooming and toileting. Other household tasks involving stretching are difficult as well. Since I have very limited energy or stamina, my grandson and granddaughter come over to have breakfast with me every Saturday morning. They help me catch up all those unfinished chores. They help me vacuum, dust, rearrange closets, clean the bathroom, and vacuum the whole apartment. They know I used to enjoy outdoor gardening so on my patio we've lots of potted plants. Most of them can be brought inside in the cold weather. Now I'm learning a little about indoor gardening too.
My kids want me to be safe and comfortable so they're always suggesting some new product. A few months ago it was the answering machine. The latest thing they've talked me into trying is the cordless phone. It used to take me so long to answer the phone. They worried I might fall again, like I've done a few times already, in my haste to answer the phone. They felt it was especially urgent to teach me how to use this thing. The only trouble is I'm finding it too complicated for me so far, but each weekend I get another lesson. Thank goodness they're such patient teachers. They're really eager for me to understand how to use it. Learning new gadgets takes me a long time when they involve electronics which have a lot of buttons to choose from.

I mentioned earlier that my granddaughter helps me out once a month. We're considering having her help me at the shopping mall more often. I've noticed that the lighting in some of the dark areas around the stores I go make me scared of taking a spill.

R: TELL ME ABOUT STRATEGIES YOU'VE FOUND EFFECTIVE FOR SOLVING THE MULTIPLE CHALLENGES YOU HAVE WITH DAILY ACTIVITIES?

I'm learning to slow down and enjoy life one day at a time. I keep reminding myself how lucky I am to have a family who really cares about me and looks after me so consistently. They're the most important part of my world. They encouraged me to move to their neighborhood. I wouldn't have gotten that comprehensive health check up at the doctor I used to see. As soon as I moved here and checked in to the new doctor, I was diagnosed with breast cancer.

I realize now how my move was well timed, I might not be here if it hadn't happened when it did. My family appreciates my intense need for sustaining personal freedom and independence. I realize lately that it would be so easy for me to give up this daily struggle, but then I know I'd hate myself. I realize I don't have nearly so many problems as other friends at the Center regularly cope.
My friends in the Diabetes Support group are really important contacts for me. We talk often by phone too, their encouragement helps me to keep trying. Through them I'm less anxious because I have a sense of what could happen next. We all try to help one another. Someone tells me a trick they've found helpful and then I share some ideas of mine with them. For example, learning about these new assistive products, at the moment I don't feel I need any of the products. But I do know if I get worse and find I need to use them I'll know what's available and can get them quickly. I've tucked the information away for another day but I've already shared it with friends who'll be ordering those products now.

R: YOU'VE TOLD ME REASONS WHICH CONVINCED YOU TO MOVE FROM YOUR SINGLE FAMILY HOME OF MANY YEARS TO THIS APARTMENT. REGARDING YOUR SPECIAL INTEREST IN LEARNING, WHAT LEARNING OPPORTUNITIES HAVE YOU FOUND SINCE YOU ARRIVED?

C: Well in the description of my daily routine, I referred to quite a few recent learning experiences. It seems my motivation to learn is higher than ever before because it's a matter of survival. I intend to stay independent and live alone so I must adapt and learn new ways of living. I've learned to do: home exercises for my shoulder after the mastectomy; daily insulin injection; take a shower using a different technique and with assistive products; manage a more appropriate diabetic diet regime.

I value my caring family and friends more than ever before. I've learned the importance of developing new friends and recognize the need to work hard to locate new friends. This was especially true after having to move away from the comfortable circle of friends I had before. Ongoing friendship development becomes critically important because in the seventh decade one begins to lose friends more frequently.

One of my new friends at the Center has had a stroke. She has limited ability to stretch like I do from the mastectomy. Neither of us can put our left hand over our head. Putting on a heavy winter coat is really hard. She showed me how to sit down, then lay the coat over the chair seat so it holds the weight of the fabric. Then she slips the arm of the coat over the weak arm and reaches the strong arm back into the opposite sleeve of the coat.
I want to learn how to do that too, I've practiced but I can't do it yet.

R: PLEASE DESCRIBE ASSISTIVE TECHNOLOGY PRODUCTS YOU USE ON A DAILY BASIS IN YOUR HOME?

C: In my house I have the usual technology and appliances for convenience. I use a dishwasher, clothes washer/dryer, cordless phone, answering machine, VCR/TV. And now the newer products, the bath bench, the flexible hand held shower, the extended handle bath sponge, and long handled reacher. I want to find a product to help me put on my winter coat and other clothing garments which go over my head or around my shoulders.

R: WHAT WERE YOUR THOUGHTS AND FEELINGS ABOUT LEARNING TO USE THOSE PRODUCTS AS WELL AS NEW PRODUCTS TO ACCOMPLISH DAILY TASKS.

C: I found that practicing in my own home makes all the difference for me. Usually someone demonstrates it for me in the doctor's office or a store, and then I go home and practice frequently. My kids are so eager to help me they've become my personal instructors. Each weekend we have a class for me to learn one thing or another.
R: I'M INTERESTED IN A DESCRIPTION OF YOUR DAILY WORLD, ELOISE. WHAT DO YOU DO AT HOME EACH DAY, WHERE IN THE COMMUNITY DO YOU GO WHEN YOU LEAVE THE HOUSE?

C: Well each day the activity I'm able to do depends on the amount of pain I'm experiencing because of my arthritis. Some mornings I can barely move about the bedroom, much less bathe myself, or even eat breakfast. The joints in my hands, shoulders and hips hurt so much when I move, lift my arm or try to hold an object in my hand. My children help me on days like that. I've try hard to identify why the pain gets worse on some days. It seems like if I've gotten overtired and feel stressed out then that influences my pain level quite a bit.

On other days the pain will be barely noticeable. My doctor told me on painful days to just move about very, very slowly. Generally after I've been sitting up and slowing inching myself about for awhile, as the day wears on I begin to feel less pain. It's critically important for me to get to the Arthritis Support Group meetings. Those meetings give me a real psychological boost. I never miss a session because I want to learn the latest information about how to stay on top of managing this chronic condition. I find it helps me to hear from others how they deal with their painful joints. Even though both my parents had the same ailment, they didn't cope with it very well. I intend to do better than they did. They just seemed to stop living.

R: DO HEALTH PROBLEMS LIMIT SPECIFIC DAILY ACTIVITIES, BESIDES PERSONAL CARE WHAT ABOUT OTHER HOME MANAGEMENT CHORES?

C: Of course, on really bad days the grandchildren do everything. During the day when they're away at school, I benefit most by keeping in touch by phone with our Friendship Circle. Our church sponsors this phone check-up service for members who are often shut-in and don't get out very easily. I'm one of the weekly coordinators. As far as activities at the Senior Center, they're on my daily schedule but some days that just doesn't work out.
R: TELL ME ABOUT STRATEGIES YOU'VE FOUND EFFECTIVE FOR SOLVING THE MULTIPLE CHALLENGES YOU HAVE WITH DAILY ACTIVITIES?

C: Living one day at a time is my motto. Another strategy which I've found invaluable is to accept that which I can't change. When I'm able I get out of the house each day. If not, I make good use of our speaker phone to keep in touch with others worse than I am. I rely on many assistive products and am always looking for new ones.

R: YOU'VE TOLD ME SOME REASONS WHICH HELPED YOU DECIDE TO MOVE FROM YOUR SINGLE FAMILY HOME OF MANY YEARS TO THIS NEW APARTMENT. ONE REASON WAS YOUR LIFELONG INTEREST IN LEARNING, TELL ME ABOUT SOME OF THE LEARNING ACTIVITIES YOU'VE JOINED HERE.

C: The reason the Arthritis Support Group is so important to me is that I'm able to learn new strategies which help me better manage my chronic arthritis. Recently our group invited a speaker from the Arthritis Association. She showed us a video about reducing the stress on hand and shoulder joints which are most painful for me. She also gave us a brochure to take home which had clear pictures illustrating how to reduce hand joint stress when you hold things. I'm trying to learn to apply the tips daily.

R: PLEASE DESCRIBE ASSISTIVE TECHNOLOGY PRODUCTS YOU USE ON A DAILY BASIS IN YOUR HOME.

C: I certainly use many of the same ones that others talked about. For example, I have a dishwasher, clothes washer/dryer, VCR and TV w/remote control, vacuum, can opener and cordless phone. I also use a bath bench, hand held flexible shower, extended handle bath brush, zipper pull and button hook. Nowadays, I try to help more in meal preparation. Although I receive meals on wheels, I still like to make my own recipes. I'm looking for an automatic jar opener. The therapy students told us about one which I plan to look at when we to Brookstones my favorite store.
R: WHAT WERE YOUR THOUGHTS AND FEELINGS ABOUT LEARNING TO USE THOSE PRODUCTS AS WELL AS NEW PRODUCTS TO ACCOMPLISH DAILY TASKS?

C: Survival is the mode where I often find myself. This motivates me to continue the daily struggle to master new strategies which can allow me to continue living alone. Even though I need community services delivered to me on some days, I care about learning new strategies. And even though my family is called upon so frequently to bail me out, they thoroughly understand how much I treasure my freedom.
CATHERINE'S PROTOCOL

R: I'M INTERESTED IN A DESCRIPTION OF YOUR DAILY WORLD, CATHERINE. WHAT DO YOU DO AT HOME EACH DAY, WHERE IN THE COMMUNITY DO YOU GO WHEN YOU LEAVE THE HOUSE?

C: Well, I have major vision limitations and some sensation loss because of my diabetes. I'm still independent with personal care activities. I need help with home management type activities, i.e., cleaning, cooking, shopping, financial management, etc.

I've always been a very active church participant. In fact my family and I picked this senior church sponsored, federally subsidized senior apartment complex for several reasons. It was affordable, and next door to my church. I've always gone to church every day. I attend a weekly adult Bible study group. Then there are often public health classes downstairs at Lake Gardens which I try to attend.

R: DO HEALTH PROBLEMS LIMIT SPECIFIC DAILY ACTIVITIES, BESIDES PERSONAL CARE WHAT ABOUT OTHER HOME MANAGEMENT CHORES?

C: The vision and sensation losses create minor limitations for me. For example I can no longer read my personal mail or write checks. I'm comfortable asking anyone visiting my apartment to do that for me. Sometime it is apartment staff or a neighbor or my family.

When I watch TV its more like listening to the radio because I can't distinguish parts of the picture. I used to have trouble reading appliance control dials but the public health occupational therapist helped me with that by applying raised plastic resin so I can feel appropriate on/off locations. Attending class at church, or downstairs, I often rely on taped readings to prepare for the next class session. My family usually takes me out once each weekend so I get my errands done then. We visit over lunch or dinner at a restaurant. For medical appointments the apartment staff arrange for my transportation.

Otherwise I'm really independent in all other daily activities. When I dress sometimes the combinations I select may be a clash. My daughter help me shop nowadays so we pick...
solid colors so that eventually that problem will be eliminated. I try to arrange my closet in a sequence lining up appropriate matching separates when my family is here.

R: TELL ME ABOUT STRATEGIES YOU'VE FOUND EFFECTIVE FOR SOLVING THE MULTIPLE CHALLENGES YOU HAVE WITH DAILY ACTIVITIES.

C: I think the best strategy is to accept the need for limited dependence in certain aspects of my daily world. I'm still able to live alone which is what I is the most important to me. Being in this apartment complex with others my age and right next door to my church is an ideal arrangement. I feel in complete control of my life and am comfortable asking for the help I need.

R: YOU'VE TOLD ME SOME REASONS WHICH HELPED YOU TO DECIDE TO MOVE FROM YOUR SINGLE FAMILY HOME OF MANY YEARS TO THIS NEW APARTMENT. DO YOU PARTICIPATE ACTIVELY IN CHURCH LEARNING GROUPS AS WELL AS IN YOUR APARTMENT COMMUNITY?

C: My daily schedule is much busier than ever before. Despite declines in my vision and sensation in my hands/feet from the diabetes, I've been able to keep up with regular participation in many different adult learning groups. Getting out each day helps me to keep my problems from weighing me down. I feel peaceful when I can get to church every day and sometimes twice a day. I attend all the public health education classes. I enjoy cooking new diabetic recipes they distributed there. I am pleased to share them with others at the Lake Garden community pot luck lunches.

R: PLEASE DESCRIBE ASSISTIVE TECHNOLOGY PRODUCTS YOU USE ON A DAILY BASIS IN YOUR HOME.

C: It was a surprise for all of us to recognize how many assistive technology products we've been using recently. In our health education discussion we were all surprised how many products we never called assistive products. For example, wearing eyeglasses, using a cane, the dishwasher, vacuum cleaner, clothes washer/dryer, cordless phone, VCR, and TV.
Lately, I've noticed very dramatic vision loss. I got frightened recently thinking that it might get impossible to do assignments for my various adult learning groups. I'd be embarrassed to attend classes without having read the material for discussion. I was relieved when I learn from the occupational therapist and public health nurse the public library could help us. We were able to borrow the special equipment from the County library. Now I listen to my preparatory tape easily on my own.

R: WHAT WERE YOUR THOUGHTS AND FEELINGS ABOUT LEARNING TO USE THOSE PRODUCTS AS WELL AS NEW PRODUCTS TO ACCOMPLISH DAILY TASKS?

C: I've always been pretty handy with my hands. For example, since I've always crocheted while I watched TV, even though I can no longer see the stitches, I can still feel them. I was even able to teach my neighbor last week to start her new project. We're making items for the Fall Bazaar.

This ability for visual imagery seems to continue despite my increasing external vision loss. I was pleased when the therapist verbally described and tactually demonstrated use of the tape recorder appliance that I caught on so quickly. She left it with me and I just kept trying it over and over. Now I've learned what every button is for.

Motivation to keep learning.

Social role—friend, volunteer.

Learning reinforcement at home.
DOROTHY’S PROTOCOL

R: I'M INTERESTED IN A DESCRIPTION OF YOUR DAILY WORLD, DOROTHY. WHAT DO YOU DO AT HOME EACH DAY, WHERE IN THE COMMUNITY DO YOU GO WHEN YOU LEAVE THE HOUSE?

C: My daily schedule revolves around active community involvement. It is carefully planned around personal limitations experienced as I strive for proactive management of chronic late life diabetes. I worked for 30 years as an office manager. My self esteem is strong because I found a place to use previous career skills in my new retirement world. The Diabetes Support Group for which I am facilitator meets twice a month. I'm generally over at the Senior Center a few hours each day. I have a close circle of friends and we regularly enjoy eating lunch at local restaurants. We help each other to stay on our special diabetic diets. We've even found some restaurants have begun to regularly provide special foods.

It was so exciting for my daughter and me when she told me about the condominium's availability. She's a successful realtor. I told her exactly what I needed so she was able to look at available places with a new set of eyes. This condo was picked because we both felt it offered me increased convenience. The room layout and building style was appealing, it was all on one floor. The neighbors seemed nice and have been attentive to my special needs. The geographic location next to wooded parkland was an extra bonus. I've always enjoyed the out-of-doors and the view from the balcony and my apartment windows is special. The grandchildren have a place to play outside when they come to visit.

I'm still able to drive my own car so I can take care of all my grocery shopping needs. The yard workers are willing to help me unload groceries. I'm still able to pick up my friends who aren't able to drive anymore. I do worry about what I'll do when driving isn't possible. I expect I'll rely on my friends or else use taxi service. There just aren't public buses which cover this part of town. I don't drive anymore at night because my vision in the dark makes me nervous and tense. It's hard trying to judge distances with oncoming car headlights. I'm always back at home before nighttime arrives.
R: DO HEALTH PROBLEMS LIMIT SPECIFIC DAILY ACTIVITIES, BESIDES PERSONAL CARE... WHAT ABOUT OTHER HOME MANAGEMENT CHORES?

C: Those health problems I have do certainly limit some personal care activities, i.e., bathing, food preparation regarding diet compliance, and home management chores, i.e., housecleaning, yard work, i.e., patio gardening, and to some degree, grocery shopping as well. The condominium staff are available to take care of most of the heavier house cleaning and all of the yard work. They'll even care for my flower planters should I decide later on that I need that help.

R: TELL ME ABOUT STRATEGIES YOU'VE FOUND EFFECTIVE FOR SOLVING THE MULTIPLE CHALLENGES YOU HAVE WITH DAILY ACTIVITIES?

C: Earlier, I stressed my desire to be proactive about diabetes management. The primary strategy I've followed since I was first diagnosed is to strive to adopt recommended strategies quickly. The first challenge was mastery of self injection of daily insulin dosages. I found this to be the hardest task with which I'd ever struggled. But now that its behind me, I found I've gained confidence about facing other new challenges which may lie ahead.

It seems to me to be the only way to the meet the changing demands I face. Others indicate I can anticipate a frightening array of complications from diabetes. Therefore, I'm making a conscious and sustained effort to continue to be in charge of each aspect of my life. The opportunity to meet with other older adults experiencing the same disease I have is invaluable. We help one another by phone calls every day. I find that awareness of what lies on the horizon to be particularly comforting.

R: YOU'VE TOLD ME REASONS WHICH HELPED YOU DECIDE TO MOVE TO THIS NEW SUBURBAN APARTMENT. HAVE YOU BEEN ABLE TO PARTICIPATE IN PERSONAL LEARNING SINCE YOU MOVED IN TO YOUR NEW HOME?

C: Certainly learning the latest information about managing my chronic diabetes condition continues to be my highest personal learning priority. My decision to facilitate the Diabetes Support
Group at the local Senior Center enables me to share this focus on learning with peers who share that parallel interest. I regularly seek new speakers to meet with the group. The group members have told me that they benefitted from the occupational therapy student presentations about assistive technology and the opportunity to borrow products to learn about at home.

Drawing from my past career experiences as an office manager, establishing a home office in my new condominium allows me to find applications for specific skills in my retirement living. As an extension of the Senior Center support group involvement, I often asked to use my computer to complete reports for other groups at the Center and also through my Church group involvements. However, there were some new aspects regarding use of the new home PC which we picked that are different from the previous office model. I've enrolled in a class which meets twice weekly at the local community college for the PC.

R: PLEASE DESCRIBE ASSISTIVE TECHNOLOGY PRODUCTS WHICH YOU USE ON A DAILY BASIS IN YOUR HOME.

C: Well, I have those products which most of us don't even consider as technology because we've gotten so used to using them. I wear eyeglasses. I have a telephone answering machine. I use a VCR with remote control for it and the TV. I have a telephone answering machine. And I have a clothes washer, dryer and dishwasher.

You can see I have my own personal computer in the office over there. I'm even taking a class several afternoon each week because I want to get better at using all of its features. At my previous job, my secretary did most of the computer tasks. I wanted to be better able to manage that at my new home office. I regularly offer to do Senior Center or Church reports on my home computer just to creates an opportunity to improve my knowledge of computer management.

Soon after I moved in I invested in a very lightweight vacuum cleaner and have found it works like a charm. Since I've begun to experience foot care problems, I'm aware I need to pay close attention to home safety issues. The last thing I want to do is fall and fracture my hip. As a diabetic, any wound requiring skin healing following surgery or accidents frequently takes a long time and can lead to serious infections.
R: WHAT WERE YOUR THOUGHTS AND FEELINGS ABOUT LEARNING TO USE THOSE PRODUCTS AS WELL AS NEW PRODUCTS TO ACCOMPLISH DAILY TASKS?

C: I don't have much difficulty learning to use most products. However, I am aware that practice in the setting where the product will be used is critical. For example, I began to use the computer at my office before I retired. However, for my home use we selected a model slightly different from that had been available at the office. Relearning some processes has been more difficult than I'd anticipated. The real motivating force with new learning seems to be this awareness that I have a real problem which I need to resolve. For example with the insulin injections, my inner voice said "you need to know" or the alternative would be to have someone come to my home daily to give me my shot. That awareness strengthened my resolve to persevere until I'd mastered that skill.

Learning reinforcement necessary.

Increased motivation with declining health status.
HILDAS PROTOCOL

R: I'M INTERESTED IN A DESCRIPTION OF YOUR DAILY WORLD, HILDA. WHAT DO YOU DO AT HOME EACH DAY? WHERE IN THE COMMUNITY DO YOU GO WHEN YOU LEAVE THE HOUSE?

C: Now that I've moved to the senior apartment complex, I find more to do than I ever was able to do before. In my apartment I'm completely independent with daily activities and home management chores. Naturally, since I walk slowly and get tired more quickly because of the short leg brace and cane, I purposely limit the amount of walking I attempt outside in the neighborhood. I was pleased to find that in the Community Room on the first floor of Lake Gardens, they schedule activities every day. The distance from my 5th floor apartment to the first floor is easily managed. I've even started taking a class in advanced hand stitchery. I coach the students in beginning hand stitchery and basic machine sewing.

I wake up pretty early to get myself ready for the day. I try to tidy up in my apartment at least every other day. I practice my organ daily because it serves as therapy for my leg and it gives me a great deal of pleasure. I enjoy letter writing to old friends in Texas. My granddaughter and daughter-in-law come over every other weekend. We go grocery shopping or just out to lunch. My son lives nearby and makes sure I get to any outside appointment I might have.

R: DO HEALTH PROBLEMS LIMIT SPECIFIC DAILY ACTIVITIES, BESIDES PERSONAL CARE WHAT ABOUT OTHER HOME MANAGEMENT CHORES?

C: Yes, although I'm very independent, since moving around is much slower for me most activities take a longer time to complete. For example, bathing requires that I sit down for my own safety because I can't wear my brace in the tub. Lately, I'm even having trouble getting to the bathroom in the middle of the night as quickly as I need to. I don't have time to struggle with my brace and scurry to the bathroom in time. I want to learn about available products.
But as far as home management, I'm quite independent and can complete those tasks as long as I allow plenty of time. Of course, home management tasks extend outside the house, i.e., going shopping, getting to the dry cleaner, doing laundry, etc. There I rely on help for transportation and help carrying items or to pull a heavy shopping/laundry cart.

R: TELL ME ABOUT STRATEGIES YOU'VE FOUND EFFECTIVE FOR SOLVING THE MULTIPLE CHALLENGES YOU HAVE WITH DAILY ACTIVITIES.

C: Soon after I turned seventy I recognized that my demands on my son and his family had increased. I tell them all the time how much their help means to me. I recognized if it wasn't for Kurt and his family, I could no longer live alone. When his company transferred him to Virginia, they asked me to move with them. Although the part time employment I had at the Senior Center in Texas was hard to give up, I knew I'd have to move too. The director of that Center, other staff and participants hold a very important place in my memories. I was the oldest person studying piano when they started piano classes at the Center. We used to give piano serenades and sing-a-longs which were really fun for everyone.

Working at the Senior Center was a wonderful training experience for me. I got to be much better at making new friends. You know, that's not easy. Most older people lose so many friends as one or the other dies, or relocates. I wasn't afraid about moving to a new town because I was comfortable about how to make new friends quickly. In the past people often had a hard time understanding my German accent. And too, some people seem afraid of me because I use a cane and wear a leg brace. Once they see I can manage on my own that seems to put them at ease. I enjoy working with people and find that through volunteering to teach a class or being a student in a new group, the hesitancy people have with my accent, and using the cane and brace is soon forgotten.

When we first arrived in Virginia we knew we wanted to find an apartment for me. Neither of us felt it was time to move in with Kurt and his family just yet. We were lucky to find this church sponsored, federally subsidized, senior housing apartment complex. I guess the most helpful strategy I follow is to recognize and accept just how dependent on my family and

Accept help with transportation.

Accept family support.

Relocation.

Increased self-esteem led to social role assumption.

Renewed comfort with ability to make new friends.

Accept help from family.
friends I am for certain activities. However, I know I'm also fiercely independent and intend to continue living alone for as long as humanly possible. I'm lucky my family believes it's worth their time and effort to help me make that work as long as possible.

R: YOU'VE TOLD ME REASONS WHICH HELPED CONVINCE YOU TO MOVE FROM YOUR APARTMENT TO BE NEAR YOUR ONLY SON. LEARNING WAS SUCH AN INTEGRAL PART OF YOUR LIFE IN TEXAS, TELL ME ABOUT SOME OF THE LEARNING GROUPS YOU'VE BEEN PART OF SINCE YOU ARRIVED.

C: Well, when I arrived I knew I'd have little trouble making new friends. I was welcome by all my apartment floor neighbors. Most seemed happy to have real piano music to listen to each day. Some of them asked if they might come in occasionally and sit and listen or sing along. None of them could believe I really learned how to play after I was 60 years old.

I was glad that some of them had also traveled out of the US. They were interested in German music. It was fun to talk about the mementos I hang on the living room walls. We all shared memories from our young adult work experiences, and family life when our children were growing up. Some of the women seemed interested that I'd learned to do yarn stitchery in Texas at the Senior Center. Hearing their interest, I volunteered to teach a course for them. One of them had volunteered at the front desk when she first moved in and found it helped her to recognize faces and learn more about routines at the apartment complex. I decided to try that too.

I regularly go to the Health Education Class given by the public health therapist and nurse. I've long felt that I need to know all the latest information possible so I can be sure I'm managing my chronic mobility limitation in the best way. Health education has provided me with survive skills which enable me to continue living alone as I prefer. Last week I learned about another assistive product, this commode chair could be placed near my bed. This might eliminate my nagging worry about having an accident. I hastily slip into my brace and race down the hall in the early morning hours to reach the bathroom on time. I plan to borrow a commode chair to try one out in my bedroom during the next week to see if it might help.
R: PLEASE DESCRIBE ELECTRONIC AND ASSISTIVE TECHNOLOGY PRODUCTS YOU USE ON A DAILY BASIS IN YOUR HOME.

C: I regularly use all the usual appliances like others I know—vacuum, answering machine, cordless phone, washer/dryer, and dishwasher. Then, since I've had this lifelong mobility impairment I learned a long time ago to rely on the short leg brace, cane, bath bench, hand held flexible shower, and a reaching device. When I play the piano I often use a short velcro strap to lift my braced leg on to the foot pedal when I need that component. The public health occupational therapist in Texas designed that and taught me how to use it.

R: WHAT WERE YOUR THOUGHTS AND FEELINGS ABOUT LEARNING TO USE THOSE PRODUCTS AS WELL AS NEW PRODUCTS TO ACCOMPLISH DAILY TASKS?

C: I find the strongest motivation I have is to continue living alone. This preference gives me added strength and the desire to continue learning new strategies. I want to keep learning new techniques and strategies which can minimize my struggles to exist from day to day. Those first late life learning successes in Texas— the piano, organ and hand stitchery classes, really set the stage for me. I've shared my story with so many others. I've found that they too have become motivated toward new learning in these classes. They are really proud to find they are able to learn these new ideas. It seems to give each of us renewed strength for coping in our daily lives.

Consistent use of appliances and awareness of selected assistive technology products.

Learning motivation fueled by desire to live alone.
APPENDIX F

CO-RESEARCHER'S CHOICE OF ASSISTIVE TECHNOLOGY PRODUCTS

1. Palm grip staple remover—Dorothy
2. Folding reacher/dressing stick—Agnes
3. Jar lid grip—Eloise/Betty
4. Plate surround—Eloise/Betty/Catherine
5. Plastic sock/Stocking aid—Eloise/Betty/Hilda
6. Long scrub brush—Eloise/Betty/Agnes/Hilda
7. Playing card holder—Eloise/Betty/Catherine/Dorothy
8. "T" handle bottle lid grip—Eloise/Betty/Catherine/Dorothy/Agnes/Hilda
9. Magna-lite reader—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
10. No-hold magnifying reader—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
11. Uni-turner w/L-shaped handle—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
12. Good grip vegetable peeler—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
13. Reachers—with/without lock—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
14. Shelf space—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
15. Door knob—Eloise/Betty/Catherine/Dorothy/Hilda/Agnes
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