SITUATED LEARNING AND IDENTITY DEVELOPMENT

IN A KOREAN OLDER ADULTS' COMPUTER CLASSROOM

by

YOUNG SEK KIM

(Under the Direction of SHARAN B. MERRIAM)

ABSTRACT

The purpose of this study was to understand how Korean older adults' computer learning in a face-to-face classroom is situated in a social context and how this learning influences older adults' identities. This study was a qualitative case study which examined a purposefully selected advanced Internet course for older adults in a senior center in South Korea. I observed eleven sessions and conducted semi-structured interviews with ten students in the course. Two research questions guided this study: (1) How is computer learning of older adults embedded in the learning context in terms of social interactions, learning tools, physical environment, and Korean culture? (2) How do computer learning experiences influence older adults' identities?

Data analysis guided by the constant comparative method revealed the following findings: Social interactions were embedded in students' processes of receiving information. Learning tools such as computers and lesson notes were rooted in the participants' learning processes. Where students sat determined the participants' interactions with the teacher, volunteer teachers, and peers. Korean culture such as age-hierarchy, saving face, and teachers as authority figures was also embedded in the ways the participants interacted with peers and teachers. The participants' computer learning and uses increased self-efficacy related to using computers, raised self-esteem in relation to their mental abilities, and made them feel less marginalized from modern society and family. Three conclusions were drawn related to older

adults' computer learning in a classroom: (1) older adults' computer learning in a classroom is a situated activity, (2) older adults' computer learning occurs in overlapping communities of practice, and (3) older adults' computer learning in a classroom influences learners' identities. Practical implications and suggestions for future research are provided.

INDEX WORDS: Older adults, Computer learning, Situated learning, Communities of practice, Identity development, Korean culture, Qualitative research, Case study

SITUATED LEARNING AND IDENTITY DEVELOPMENT

IN A KOREAN OLDER ADULTS' COMPUTER CLASSROOM

by

YOUNG SEK KIM

B.A., The Korea University, South Korea, 2001

M.A., The Korea University, South Korea, 2003

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial

Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2008

SITUATED LEARNING AND IDENTITY DEVELOPMENT

IN A KOREAN OLDER ADULTS' COMPUTER CLASSROOM

by

YOUNG SEK KIM

Major Professor: Sharan B. Merriam

Committee: Laura L. Bierema
                    Brad C. Courtenay
                    Anne P. Glass

Electronic Version Approved:
Maureen Grasso
Dean of the Graduate School
The University of Georgia
May 2008

DEDICATION

I would like to dedicate this dissertation to my grandfather on my mother's side - Shin, Hyun Taek, who entered heaven one month ago. He was always humorous but serious about learning. I know that he would be very pleased with the fact that I finished this dissertation only with God's grace.

ACKNOWLEDGEMENTS

First, I would like to acknowledge my major professor, Dr. Sharan B. Merriam. She has been very supportive for my entire time at the University of Georgia and especially I appreciate her timely feedback on and passion for helping me with this dissertation. I would also like to thank the committee members, Dr. Bierema, Dr. Courtenay, and Dr. Glass for their interest and input in this dissertation.

Second. I am thankful to my former major professor Dr. Dae Bong Kwon who always encourages me to think creatively and work responsibly. I also acknowledge the support and encouragement of my friends in the Humanware group in the Korea University. The Humanware group enables me to realize that how much my studies in this field are valuable.

Third, I want to express my appreciation for the wonderful support and prayers of my sisters and brothers in the Athens Korean Presbyterian Church, especially Pastor Choon-Ki Kim, HASAMO family, and Sunday school teachers. They shared my pleasure and sorrow for the last four years. I also remember how much support of my friends in the Somang Church in Seoul is precious.

Fourth, I thank people whom I met at the University of Georgia. The faculty and staff, and my peers in the program of Adult Education have contributed to my work in this program. In particular, I remember how the warm hearts of my cohort group in the program made me feel comfortable for the last four years. I am also thankful to the sincere help of my friend Dr. Karen Braxley who has provided good quality of proofreading and thoughtful input for my work.

Last, and most importantly, I acknowledge my parents, Jin-Hong Kim and Kyung-Soon Shin, and my younger sister, Hwei-Jin Kim. They have showed me what love is for my entire life.

TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

Background of the Problem

South Korea is one of the most advanced informational societies in the world. Since

2005, International Telecommunication Union (ITU) has reported the Digital Opportunity

Index (DOI), which is the internationally agreed upon indicator for measuring the level of

information societies. DOI measures core information and communication technology

indicators in infrastructure, household, and individual access areas. ITU reported that South

Korea has the highest score among the 40 leading economically developed countries in 2005

and 2006 ("Korea: The strongest IT nation," 2006). In South Korea, technology is now being

used in everyday life for communicating, managing business works, enjoying entertainment,

and finding necessary information.

However, the so-called "digital-divide" has become a severe social problem in South

Korea where information and communication are so prevalent. Digital divide refers to

demographic gaps in access to technology (Hacker & Mason, 2003). Digital divide can cause

knowledge, economic, and cultural gaps in advanced informational societies such as South

Korea; therefore, those limitations on the use of information and communication technology

can threaten individual welfare and quality of life. As new technologies keep being developed,

the digital divide widens. Research has found that age, income, education, gender, and region

are common factors associated with the digital divide (Hacker & Mason, 2003; Korea

Agency for Digital Opportunity and Promotion, 2004; Norris, 2001). The South Korean

government defined low-income people, disabled people, older adults, and people in rural

areas as information-neglected groups and has provided comprehensive support for them in

order to reduce the digital divide. The South Korean government is now managing public

places where people can access computers, and is providing low-priced broadband Internet

connection, used personal computers, and special keyboards for information-neglected groups.

Older adults are among the information-neglected groups. The definition of older adults varies according to various laws and institutions. When we define older adults as 65 years and older, in 2005 older adults made up 9.1 percent of the whole population of South Korea (Korea National Statistical Office, 2005). In many cases, the current older adult population in South Korea has been excluded from benefits of the information society. Older adults who did not have opportunities to learn computer skills in schools and workplaces have become digital-illiterate. If we assume the Internet is the key instrument of the informational society, the use rate of the Internet reflects how older adults are disadvantaged. The National Internet Development Agency of Korea (2006) reported that in 2005, 89 percent of the age group between 6 years old and 49 years old used the Internet, but only 16.2 percent of the people who are 55 years and older used the Internet. The Ministry of Information and Communication of South Korea (2006) reported that the Internet use disparity between the 7 to 19 age group and the 50 and older group was 75.3 percent in 2005. This disparity percentage means that for example among one hundred 7 to 19 year-olds, ninety people use the Internet; however, among one hundred 50 and older adults there are only about 15 people who use the Internet. This disparity percentage is very high compared to other countries; the percentage of the United States was 34 percent, the United Kingdom was 44 percent, and Japan was 64.7 percent. Although South Korea is one of the most advanced information societies in the world, a high percentage of older adults is excluded from the benefits of information society.

The Korea Agency for Digital Opportunity and Promotion (2004) reported that more Korean older adults do not use the Internet compared to older adults in other counties because of Korean older adults' low educational levels and poor economic status. Because previous

educational levels cannot be changed and economic status cannot be easily elevated, the most effective method for assisting older adults who voluntarily want to use computers is presenting learning opportunities to them. In order to reduce digital divide in the older adult population, the Korean government has tried to provide computer classes to older adults. The Korean government has supported social welfare centers, senior centers, colleges, and post offices in opening computer learning classes only for older adults. From 2002 to 2004, about 600,000 older adults took computer classes that were supported by the Korean government (Ministry of Information and Communication, n.d.). This study will explore how the social context, which has been neglected by previous literature, plays a key role in Korean older adults' computer learning and usage, and how Korean older adults' computer learning and usage influence their identities.

Studies on Older Adults' Computer Learning and Usage

A closer investigation of the previous research of older adults' computer learning and usage may provide insight into how we design older adults' computer learning classes and the unique ways in which older adults use computers. A review of the literature on older adults' computer learning and usage found motivations and barriers of older adults' computer usage, identified age-related differences in computer learning and usage, suggested appropriate instructional tips and design, and revealed benefits of computer learning and usage for older adults. First, some literature found that communicating, developing or maintaining personal relationships, shopping, and acquiring information are major reasons for older adults' usage of the Internet (Hilt & Lipschultz, 2004; Tak & Hong, 2005; Wright, 2000). Barriers to computer use include lack of need and computer knowledge, not having chances to learn computer skills, feeling using computers too complicated, high cost, and pain of using computers (Mann, Belchior, Tomita, & Kemp, 2005; Silver, 2001).

Second, previous studies revealed that older adults are less efficient than younger

people in computer learning and usage. During training, older adults missed important steps, inappropriately added steps, incorrectly executed steps, and experienced mouse control and clicking errors; they also needed more assistance and time to master basic computer skills compared to the young-old adults (Echt, Morrell, & Park, 1998). When older adults tried to find information by using the Internet or an Internet-based library search system, they needed more steps and made more errors (Kubeck, Miller-Albrecht, & Murphy, 1999; Mead, Sit, Rogers, Jamieson, & Rousseau, 2000).

Third, previous studies have suggested teaching strategies to minimize age-related declines in psychomotor and cognitive abilities. Instructors need to expect that older adults will perform more slowly and make more errors; therefore teaching through repetition, allowing more time to practice and take notes, constructing self-paced formats, having enough computer stations for each student's hands-on-practices, and fostering an environment wherein learners are encouraged to ask questions are recommended (Crow, 2002; Stephenson, 2002; Van Fleet & Antell, 2002). It is also a good idea to provide senior-friendly printed materials that have step-by-step instructions using clear wording and an easy-to-read font type and size, present laminated index cards containing basic information about using computers, and distribute a list explaining computer jargon (Bean & Laven, 2003; Puacz & Bradfield, 2000; Stephenson, 2002). Studies commonly suggest that senior-only classes or age-peer instructors make older learners feel more comfortable and more willing to ask questions (Puacz & Bradfield, 2000; Van Fleet & Antell, 2002).

Last, previous studies delineated the benefits to older adults of using computers or learning computer skills**.** Using the Internet gives older adults chances to improve communication skills, develop a new awareness of their potential as learners, engage in self-development, and develop or maintain interpersonal relations with others who have similar interests regardless of age (Millar & Falk, 2000; Roberts, 2001; Wright, 2000). Previous

studies also found that greater involvement with the on-line-community predicts lower perceived life stress; further, more computer knowledge brings high self-efficacy and high self-efficacy partially leads to life satisfaction (Karavidas, Lim, & Katsikas, 2005; Wright, 2000). Although the previous studies assist us in understanding motivations and barriers of older adults' computer usage, age-related differences in computer learning and usage, appropriate teaching methods, and the benefits of computer usage, we know little about how computer learning actually occurs in the classroom and how computer learning experiences change older adults' identities.

<center>Situated Learning</center>

In most cases, computer learning programs for older adults occur in face-to-face classrooms. Older adults who do not know how to use computers would not have the skills to take web-based computer instruction or computer-assisted classes. In addition, older adults who are unable to purchase a computer or pay for the Internet connection fee would need to participate in computer courses that occur in real classrooms. In order to fully understand older adults' computer learning that usually occurs in real classrooms, we need to look at this practice using a perspective that understands learning as social practice. What is known as situated learning or context-based learning assumes that social interactions, learning tools, physical environment, and the culture of classrooms shape the learning processes.

Traditionally adult educators have emphasized the role of experience. Wilson (1993) maintained that in traditional adult education, educators encourage learners to learn from their own experience; however, from a situated learning perspective an adult learns *within* their experience and situations. Merriam (1993) argued that situated learning focusing on the process of learning can accommodate the context of adult life and also can describe unique characteristics of adult learning. Through situated learning, adult educators will "expand their understandings of and interest in the adult learner beyond the limits of individual psychology

<center>5</center>

taken out of the context of life experience" (Merriam & Brockett, 1997). Cognitive perspectives perceive learning as an individual activity that emphasizes internal processes in the human brain. In contrast, situated learning perspectives assume that learning is a complex social phenomenon which is affected by other people, physical settings, tools and culture (Brown et al., 1989; Greeno, 1997; Hansman & Wilson, 1998).

Situated learning believes that "all learning is fundamentally social in nature" (Taylor & Boulton, 2004, p. 474). The situated learning perspective understands learning, not as an individual activity that takes place inside one's brain; rather, learning is rooted in individuals' interactions with other people, learning tools, and environments. Wenger (1998) argued that "we interact with each other and with the world and we tune our relations with each other and with the world accordingly. In other words, we learn" (p. 45). Cognitive perspectives argue that learning is an activity of acquiring knowledge, storing it in memory, and retrieving it in new situations. However, situated learning assumes that because learning is social practice, it should be understood as participation in interactive systems among individuals, other people, and materials. In situated learning perspectives, many researchers in the adult education field describe the components that shape the learning process. Wilson (1993) listed three elements that affect or structure knowing and learning: social activities, situationally provided learning tools, and interaction with setting. Hansman (2001) suggested that there are four components that structure learning: interactions among learners, the tools they use within social interactions, the activity itself, and the social context where the activity takes place. Hansman argued that learning always takes place with other people, and learning tools assist or structure the cognitive process, and the setting interrelates with social activity and tools.

Hansman and Wilson (1998) provided us with a good example of how a situated learning perspective could be used to understand computer-based writing class in a

community college. They sought to understand adult's learning in the computer-based writing class through examining the tools that adults use, the activity of using computers, and the social culture of the classroom. By using qualitative case study methods, this study found that first, computers are useful tools to make the writing process easier; second, using computers helped students construct their own processes for writing; third, "the interactive social culture within the computer classroom provided opportunities … to talk about their writing … with each other" (p. 30). This research shows well how situationally provided tools and social interventions in classrooms affect or shape learning processes.

Lave and Wenger (1991) tried to understand learning as social practice in the concept of communities of practice. They coined the term "legitimate peripheral participation" and stressed that the concept of legitimate peripheral participation is an analytical perspective of learning, not an educational form, pedagogical strategy, or teaching techniques. The term of legitimate peripheral participation delineates the process of how newcomers become full and constitutive participants in a community of practice (Lave & Wenger). A community of practice means "a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice" (p. 98). Newcomers into a community of practice start to work at the margin; they watch old-timers' performance and practice a little; they begin to interact with other members; and finally they become old-timers. Lave and Wenger pointed out that "legitimate peripheral participation is … a reciprocal relation between persons and practice" (p. 116). In a community of practice, newcomers become old-timers through the learning process, and this learning is fundamentally situated in the history, cultural values, and rules of community, social interaction, technology, and learning tools.

In addition, another important tenet of situated learning is that as an individual interacts with communities of practice, his or her identity develops. Lemke (1997) defined a

7

human community as "an ecosocial system" where people interact with other people, tools, and artifacts. In this system, a human being is "a hybrid of both material body and social-culture persona, a body-subject" (p. 42). In this ecosocial system, human beings tend to build their identity while interacting with other parts of the ecosocial system. Lemke asserts that through participating in a community of practice, "individual identities are constructed across the whole trajectory of participation" (p. 44). In addition, Greeno (1997) maintained that the cognitive views believe individual skills are distinguishable and emphasize the value of acquiring knowledge and skills; however, the situated learning perspectives value learners' growth of identities. According to Greeno, situated learning perspectives understand learning as "progress along trajectories of participation and growth of identity" (p. 9). Situated learning also assumes that methods of instruction are not only tools for acquiring skills. Through participating in methods of instruction, students "develop … their identities as learners, which include the ways in which they take initiative and responsibility for their learning" (p. 9).

Lave and Wenger (1991) also asserted that through the process of legitimate peripheral participation, newcomers become a member of a community of practice and in the process their identities become transformed. The individual aspects of learning understand the person as a mainly "cognitive entity" (p. 52), but situated learning understands the person as a "member of a sociocultural community" (p. 52). When we understand learning as social practice, learning engages the whole person with relation to not only specific activities but social communities (Lave & Wenger). Through learning processes, people become a full participant of communities of practice; therefore, learning means becoming different people in terms of their activities, their tasks, and their functions in a community of practice; "to ignore this aspect of learning is to overlook the fact that learning involves the construction of identities" (Lave & Wenger, 1991, p. 53). Wenger (1988) explains how an individual's

identity can be changed in communities of practice. He stated that we form our identities by negotiating the process of understanding ourselves through participation and the process of other participants' reifying ourselves. Our identity is composed of various forms of membership that we have in different groups.

This connection between learning and identity development is certainly not new to adult development. Development has been seen by many as a learning process even into late life. Erikson (1959) argued that identity development consists of eight stages and each stage has a certain ratio between the positive and negative; when an individual achieves the balance which is toward the positive, he or she can successfully solve crises in each stage. For example, in stage eight (integrity vs. despair), integrity can be achieved when an individual admits his or her life is only one and accept one's life by necessity (Erikson, 1963). Reminiscing is positively related to achieving integrity (Merriam, 1990) and educational activities encouraging older adults to recall their past experiences may help them to attain integrity (Wolf, 1998). In addition, Levinson (1978) argued that after age 65 there is the structure-building period of late adulthood. The main task in the structure-building period is "to form a life structure and enhance our life within it" (Levinson, 1986, p. 7). Educational activities can encourage older adults to find new areas to invest their time and energy and to have more meaningful relationships with family, community, and religion; therefore, older adults' life structure continues to be affected by learning in the era of late adulthood.

Research on older adults' computer learning and usage has been conducted through cognitive perspectives. Cognitive perspectives succeed in describing how learning takes place inside of one's brain; however, they fail to show how learning actually occurs in face-to-face classrooms. Situated learning theory understands learning as social practice and assumes that social interactions, learning tools, physical environment, and culture affect learning processes. In addition, situated learning maintains that an individual's identity becomes changed when

he or she learns something within a community of practice. Therefore, understanding older adult's computer learning through situated learning perspectives will assist us to understand how diverse factors in the classroom may influence older adult's computer learning, and how older adults' participation in a computer class may affect their identities.

Problem Statement

Although South Korea is one of the most advanced informational societies in the world, gaps in access to and usage of this information – a phenomenon known as the digital divide – threaten an individual's welfare and social equality (Hacker & Mason, 2003; Korea Agency for Digital Opportunity and Promotion, 2004; Norris, 2001). Older adults are one of information-neglected groups in South Korea. In order to reduce this age-related digital divide, the Korean government has supported computer learning programs for older adults and from 2002 to 2004, about six hundred thousand seniors participated in these programs (Ministry of Information and Communication, n.d.).

Older adults' computer learning has been studied from a cognitive learning perspective. Previous literature revealed that the motivation of older adults' computer usage is communicating and having personal relationship, shopping, and seeking for information (Hilt & Lipschultz, 2004; Tak & Hong, 2005; Wright, 2000). However, lack of need and computer knowledge, high cost, and pain are barriers to older adults' computer usage (Mann, Belchior, Tomita, & Kemp, 2005; Silver, 2001). Studies found that older adults are slower and make more errors than younger adults when they use computers (Echt, Morrell, & Park, 1998; Kubeck, Miller-Albrecht, & Murphy, 1999). In order to reduce age-related cognitive changes, studies recommend senior-only classes, age-peer instructors, self-paced learning, senior-friendly printed materials, and repetitive teaching methods. (Bean & Laven, 2003; Crow, 2002; Van Fleet & Antell, 2002). In addition, through computer learning programs, older adults may engage in self-development and experience a decrease in perceived life stress

10

(Karavidas, Lim, & Katsikas, 2005; Millar & Falk, 2000).

These studies however, have failed to understand computer learning as social practice. Studies understanding learning as social practice found that learning is fundamentally situated and social interactions, learning tools, and culturally structured settings influence learning (Hansman & Wilson, 1998; Lave & Wenger, 1991; Lemke, 1997). Studies understanding learning as social practice also believe that people's identities change when they are involved with communities of practice. When individuals are involved in learning contexts, people's identities change in terms of their new abilities, relationships with others, and new activities. Due to the heavy focus on cognitive theoretical explanations of older adults' computer learning, we have failed to understand older adults' computer learning as social practice, and we know little of how participation in a computer learning class affects older adults' identities.

Purpose of the Study

The purpose of this study was to understand how Korean older adults' computer learning in face-to-face classrooms is situated in a social context and how this learning influences older adults' identities. The research questions that guide this study are as follows:

1. How is computer learning of older adults embedded in the learning context in terms of social interaction, learning tools, physical environment, and culture in the classroom?

2. How do computer learning experiences influence older adults' identities?

Significance of the Study

This study can bring both theoretical and practical contributions to older adults' computer learning. Viewing older adults' computer learning through the lens of situated learning allows us to understand that older adults' computer learning does not consist of cognitive learning factors alone. Situated learning perspectives maintain that learning is

embedded in contexts. Social interactions, learning tools, physical environment, and cultural background mutually shape learning processes. This research will show how learning contexts will affect older adults' computer learning processes; therefore, this study will present a more comprehensive theoretical perspective of older adults' computer learning. This study using situated learning perspectives will also reveal that older adult learning process is a social practice and rooted into learning contexts. In addition, this study will show how learning can change older adults' identities. The situated learning perspectives help us understand how individuals' identities become changed while they interact with the community in which they are involved. This research will provide a better understanding of how learning experiences can affect older adults' identities.

This study can present the practical implications for the educators and the planners for Korean older adults. First, from understanding Korean older adults' computer learning through the lens of situated learning, the educators for Korean older adults can gain a better understanding of the unique learning processes of Korean older adults. Instructors of older adults will understand how social interactions in classrooms are important and how learning processes are rooted into classroom situations. Therefore, instructors can develop instructional strategies based upon the results of this study. In addition, if instructors understand how older adults' identities are affected by computer learning experiences, the educators could better understand who older computer learners are and may develop closer relationships with older learners. Second, the results of this study may encourage administrators of the institutions teaching computer skills to older adults to change educational settings in order to take into account important situational factors in classroom.

CHAPTER TWO

REVIEW OF THE LITERTURE

The purpose of this study is to understand how Korean older adults' computer learning in face-to-face classrooms is situated in a social context and how this learning influences older adults' identities. The research questions that guide this study are as follows: 1) How is computer learning of older adults embedded in the learning context in terms of social interaction, learning tools, physical environment, and culture in the classroom? 2) How do computer learning experiences influence older adults' identities? The three major sections of this literature review include age-related changes in body, cognition, and identity, older adults' computer learning, and situated learning. The literature review of age-related changes will reveal factors affecting older adults' learning activities. The second section will review literature of older adult' computer learning and this section will give us a sense of what kinds of questions have been studied in this area. The review of situated learning will present how learning is a social practice and embedded in situations.

Age-Related Changes

Since I began to study older adults' learning, I have continued to ask the following questions; How are older adult learners different from young or middle-aged adult learners? What kinds of older adults' characteristics affect their learning? I believe that physical aging and cognitive and psychological changes make older adult learners distinct from younger adult learners and these age-related changes have influence on their processes and results of learning. Because age-related changes in body, cognition, and identity are very influential in older adults' learning, this section will review these three aspects of age-related changes.

Age-related Changes in the Body

Among many changes in the body, changes in sensory organs and the nervous system noticeably affect the learning process. This section describes how these changes affect older adult's learning processes. This section also discusses how changes in the nervous system affect older adults' reaction time which is related to their learning abilities.

Visionary sense. The surface of the cornea thickens and becomes flatter and less smooth with aging (Hooyman & Kiyak, 2005). As people age, the pupil becomes smaller and responds slowly to changes in light (Hooyman & Kiyak, 2005). Therefore, older adults experience difficulties with low-light situations and subtle changes in light. Hooyman and Kiyak (2005) argued that changes in the lens may be the greatest age-related changes in the eye. Collagen is the main component of protein in the lens, and with aging collagen thickens and hardens. Therefore, the lens is getting less elastic and less able to change forms (Hooyman & Kiyak, 2005). Thickening and hardening of the lens makes older adults have more difficulty focusing on near objects (Whitbourne, 2001) and shifting their focus from near to far (Hooyman & Kiyak, 2005). Hooyman and Kiyak (2005) stated that changes in collagen tissue do not happen uniformly, so they cause different levels of hardening in the lens. The poor refraction of light on the uneven and flattened surface of the cornea causes extreme sensitivity to glare (Hooyman & Kiyak, 2005). According to Whitbourne, after age 40 adults begin to be sensitive to glare, so sudden increase in light and bright scattered light should be avoided.

Auditory sense. Hooyman and Kiyak (2005) maintained that with aging the capacity of the cochlea declines and it causes age-related hearing loss. In the range of normal speech, older adults show slow hearing loss until age 60 and fast loss after age 80. In most cases, older adults suffer from loss of high-pitched sounds (Whitbourne, 2001). Hooyman and Kiyak also stated that some older adults experience tinnitus, a high-pitched ringing. Tinnitus

is recognizing sounds in the ear or head although there is no external source of sound (Whitbourne).

Nervous System. The brain consists of billions of neurons and from about age 30, people begin to lose neurons, which are impulse-conducting cells (Hooyman & Kiyak, 2005). Whitbourne (1996) mentioned that because the nervous system does not develop after the early stage of infancy once a neuron dies, it is not be replaced. Therefore, the loss of neurons is permanent. However, not all neurons die or degenerate with age. In addition, because we can function with fewer neurons than we have, the loss of neurons does not cause mild lack of memory in old age (Hooyman & Kiyak, 2005). Recently, some neuroscientists who study neuroplasticity, the study of how the human brain can change, assert that new neurons can be created or rewire themselves every day, even in people in their 70s (Begley, 2006).

Whitbourne (1996) explained the several changes which occur in the aging neuron. The activity of neurons occurs in the cell body and the size and shape of the cell body does not change until the mid-70s. However, with aging a yellowish pigment known as lipofuscin is accumulated in the cell body. Dendrites are extensions of the cell bodies like branches of trees and their functions are receiving information. The branches of dendrites form elaborate structures and with age their elaboration deteriorates significantly. Therefore, an aging neuron receives information ineffectively from other neurons. One neuron has thousands of synapses and at the synapses the transmission of impulses from one neuron to another neuron occurs. Hooyman and Kiyak (2005) mentioned that the structure of synapses changes with age and transmitting messages at the synapses of old persons takes more time than that of younger persons. Therefore, although several factors affect reaction time, changes in synapses may be one of the reasons for increased reaction time with age (Bee & Bjorklund, 2004).

Age-related Changes in Cognition

Many studies have been conducted to understand age-related changes in intelligence and memory. Changes in processing speed, working memory, and sensory functions are regarded as major mechanisms that cause age-related changes in intelligence and memory.

Aging and Intelligence. Woodruff-Pak (1988) argued that before the 1950's when only the result of cross-sectional research existed, researchers believed that intelligence declines with age; therefore, the intelligence of older adults was lower than that of young people. However, after the mid-1950s, the results of longitudinal studies were published, and researchers doubted the results of cross-sectional research. Woodruff-Pak maintained the theory of crystallized and fluid intelligence was most influential after the mid-1950s. Crystallized intelligence is knowledge and skills that can be acquired by experience and learning, such as verbal skills and the ability to determine everyday-life problems (Hooyman & Kiyak, 2005). Fluid intelligence is the ability of efficient functioning of the central nervous system which is independent of acquired knowledge such as capacity of working memory (Bee & Bjorklund, 2004). Crystallized abilities continue to rise and stablize around the 70s; however, longitudinal studies show that fluid abilities begin to decline during the 60s (Bee & Bjorklund, 2004).

The results of longitudinal studies suggested that intelligence in adulthood can be maintained or even increased. One of the studies showing older adult's learning ability is 'the Seattle Longitudinal Study' (Schaie, 1994). This study collected data on the primary mental abilities of verbal meaning, space, reasoning, number, and word fluency every 7 years over 35 years (1956 -1991). At each follow-up assessment, new people randomly selected from the same population (members of a Health Cooperative of Puget Sound in Seattle, Washington) participated in this study, and the individuals who participated in the previous assessment were retested. This study found that the cross-sectional data and longitudinal data

show very different results of the five abilities. The cross-sectional data reveal that inductive reasoning, spatial orientation, and word fluency peak in young adulthood and then begin to decline steeply. Verbal meaning and number peak in midlife; verbal meaning declines with age, and number ability slightly show age-related differences over time. Longitudinal data of all five abilities show the stability or slight gain from young adulthood to early middle age. After age 60, all five factors begin to deteriorate and around age 70 the decline increases. Schaie (1996, cited by Quadagno, 2002, p. 184) concludes that noteworthy declines in mental abilities of five factors occurs only in late life, and many people also retain their many abilities in advanced age.

Aging and Memory. Memory is not just stored information. Most researchers consider memory as a chain of stages through which information is received, processed, held, and then either discarded or stored into more permanent storage (Whitbourne, 2001). As new information is translated into computer language for its system, humans encode new information. Encoded information is maintained through two types of memories (short-term memory and long-term memory). Finally, when the stored information needs to be used, humans retrieve it from their memories. Memory is closely related to encoding and retrieving processes. Therefore, in order to understand age-related changes in memory, it is better to discuss age-related changes in encoding and retrieving processes together.

Organizing information is one of the best ways to encode new information in order to retrieve it later. Younger adults have a tendency to organize information when they encode it, but previous studies show that older adults do not spontaneously organize information (Hooyman & Kiyak, 2005; Schaie & Willis, 2002). When older adults are instructed to use organization strategies, age-related memory differences are reduced especially for older adults with low verbal memory.

Memory consists of two different kinds of storage: short-term memory and long-term memory (Hooyman & Kiyak, 2005). If an individual pays attention to incoming information, this information is transferred into short-term memory. The capacity of short-term memory is small and can hold information only briefly. In short-term memory, incoming memory is integrated with previously stored memory and if the memory is rehearsed, this memory is transferred into long-term memory in which the information can be permanently stored.

If an individual pays attention to the information that is registered through sensory organs, the information is transferred into short-term memory. Short-term memory decides what information should be attended to and how best to store it. The short-term memory can be divided into two parts: primary memory and working memory. Primary memory holds a small amount of information to recall it immediately and can be measured by repeating immediately strings of numbers presented at one-second intervals without errors. Storage of primary memory does not have large age differences until the late seventies and eighties (Hoyer & Roodin, 2003; Schaie & Willis, 2002; Smith, 2002). However, studies show that working memory does have age-related differences. Working memory is usually defined as "the preservation of information while simultaneously processing the same or other information" (Salthouse & Babcock, 1991). Working memory holds information and at the same time processes it in order to transfer it to long-term memory. The reason for age-related deficits in working memory is debatable. Some research argues that the elderly are less efficient in working memory because they have less mental energy to attend to and elaborate information to transfer it into long-term memory (Hooyman & Kiyak, 2005). Slowing perceptual speed, and the time required to react to a stimulus and respond to it, can be another reason (Hooyman & Kiyak, 2005).

Long-term memory can be divided into episodic memory, semantic memory, and procedural memory (Bee & Bjorklund, 2004; Hoyer & Roodin, 2003; Smith, 2002). Episodic

memory deals with storing previous personal experience and events and episodic memory decreases with aging. When we use episodic memory, in our mind we re-experience a particular event from our subjective past (Hoyer & Roodin, 2003). The semantic memory deals with storing facts and knowledge that have been gathered over one's life and it is fairly stable with aging. When we use semantic memory, we do not feel as if we remember something from our subjective past; rather, we are aware that we use some parts of objective information that we possess (Hoyer & Roodin, 2003). Procedural memory deals with skill learning and retention such as driving and riding a bicycle. Because this kind of memory does not require deliberate and intentional processing, procedural memory is stable with age.

Retrieval can be expressed in two ways: recall and recognition. Recall is the ability to remember an exact piece of information such as when answering essay questions. Recognition is the ability to identify a partial piece of information such as answering multiple choice questions. Studies show that the age-related differences in recognition tests are small, but the age differences in recall tests are considerable (Hoyer & Roodin, 2003; Schaie & Willis, 2002). There may be various explanations for this result. One possible interpretation is that older adults have trouble retrieving exact information from their memories; however, cues or hints from recognition test allow them to retrieve information more easily (Schaie & Willis, 2002). Another explanation is that when we face a recall task, we try to remember information that we actually learned; however, when we meet a recognition task, we try to recognize the information that we have the feeling that we know (Hoyer & Roodin, 2002). Fry (1992) mentions that there can be several reasons for older adults' declines in recall. Neural structures become less efficient with age; previously stored information may interfere in the process of retrieving other information; inadequate organizing of information may decrease efficiency of retrieval; older adults' mistaken belief about their severe and irreversible memory loss may cause declines in memory performance.

Mechanisms of Cognitive Aging. The mechanisms of cognitive aging can be understood in terms of changes in processing speed, working memory, and sensory functions. Salthouse (1996) argued that age-related declines in many kinds of cognitive function can be explained by decreases in the speed of processing operations. He assumed the increased time needed for many cognitive operations contributes to age-related reduction in memory capacity. He stated that there are two different mechanisms which explain the relation between speed and cognition: the limit time mechanism and the simultaneity mechanism. The limit time mechanism assumes that when early operations occupy a large amount of time, limited time which remains restricts later operations. This mechanism is very appropriate when people have external time limits to perform cognitive tasks. However, as people age, numerous adaptations happen together with a gradual reduction in processing speed; therefore it is hard to predict the consequences of slower cognitive processing. The simultaneity mechanism assumes that when later processing of cognitive tasks is done, the products of earlier processing may be missing. In this mechanism, the amount of time allowed is unimportant because the major limitations occur with internal processing dynamics rather than with relations between processing factors and external time factors. Because researchers assume that working memory deals with both storing and processing of information, the simultaneity mechanism may contribute to age-related reductions in working memory functions. In summary, the limited time mechanism is based on the idea that if the processing is slow, the cognitive operation may not be finished. The simultaneity mechanism is based on the idea that if the processing is slow, all necessary information may not be available when it is needed.

Jones and Bayen (1998) and Salthouse (1996) mentioned that working memory can contribute to age-related differences in cognitive abilities. Salthouse and Babcock (1991) found significant negative correlations between age and working memory performance. They

mention that because the correlations were substantially attenuated by measures of simple processing speed, working memory may be mediated by age-related reduction in the speed of performing simple operations. Craik and Byrd (1982, cited by Park, 1999) asserted that environmental supports which reduce the burden on cognitive capacity can repair age-related declines in working memory.

Jones and Bayen (1998) and Salthouse (1996) also noted that sensory deficits are strongly related to declines in performing cognitive function. Baltes and Lindenberger (1997) investigated the correlations between linear age and both sensory and cognitive functioning. The correlations are statistically significant (<.01), and the correlation between linear age and vision is -.78 and between linear age and hearing is -.87. The correlations between linear age and six factors of cognitive functioning are also quite high, ranging from -.60 to -.82. However, when individual differences in vision and hearing are controlled, the correlations between linear age and cognitive functioning become statistically insignificant except for perceptual speed (r=-.16). Baltes and Lindenberger also maintained that "the average proportion of individual differences in intellectual functioning connected to sensory functioning increased 11% in adulthood (25-69 years) to 31% in old age (70-103 years)" (p. 12). They found a strong age-related link between sensory and cognitive function.

Age-related Changes in Identity

Because one of the purposes of this study deals with older adults' identities, this section will describe age-related changes in identity. First, this section will describe how Erikson and sociological theories understand identity. Because Erikson has usually been recognized as the person who first paid attention to the meaning of identity in popular and scientific ways (Kroger, 2007), we need to understand his approach. In addition, because another purpose of this study is to understand older adults' computer learning as a social practice, I will describe how sociological theories understand identity. Then, I will explain

two models of identities in late adulthood and various factors affecting older adults' identity.

Two Theoretical Traditions. Erikson (1968a) defined identity as "a sense of sameness and continuity as an individual" (p. 61). Erikson used William James' term "character" to define a sense of identity.

> A man's [sic] character is discernible in the mental or moral attitude in which,
> when it came upon him, he felt himself most deeply and intensely active and
> alive. At such moments there is a voice inside which speaks and says: "This is the
> real me!" … an element of active tension, of holding my own, as it were, and
> trusting outward things to perform their part so as to make it a full harmony, but
> without any *guaranty* that they will. (Italics in text, p. 19).

Using James' letter, Erikson interpreted identity as a recognition which comes upon us as a surprise rather than something that we persistently search after. Identity which is an active tension creates a challenge which makes an individual understand who he or she is (Erikson, 1968a). Erikson assumed that until an individual becomes an adolescent, identity formation cannot be accomplished. When an individual's mind and body become fully matured, one begins to seek a new sense of continuity about oneself. Around this period, an identity crisis occurs when unrelenting immature identifications conflict with a pressing new sense of self and unalterable role choices.

Erikson underscores an identity as a reasonably predictable sense of the self throughout different social contexts. Erikson understands identity as a continuous feeling of self-sameness. Regardless of places and social intonations, an individual holds a sense of self that does inform who I am (Kroger, 2007). Erikson (1968a) believed the hierarchical integration of roles that helps individuals understand existing or developing social order makes an individual feel self-sameness. Role integration within the group to which individuals belong and an inner synthesis in the individual shape identity.

22

Erikson (1968b) maintained that in adolescence an individual can attain fixed identity through the three processes: Introjection, identification, and identify formation. If a child has the successful mutuality between his or her mothering adult(s), this child would incorporate himself or herself into other images. In later childhood, individuals face a hierarchy of roles which is given by others including family. When individuals successfully interact with a hierarchy of roles, they would begin to identify themselves. Finally, after processes of repudiating and assimilating some childhood identifications, an individual finally forms one's fixed identity in adolescence. Although the final identity is fixed at the end of adolescence, it can be changed in order to be reasonably coherent across diverse situations (Erikson, 1968b).

While Erikson (1968a, 1968b) emphasized the sameness of identity across diverse situations, sociological traditions highlight the multiplicity of identity in various contexts. Sociological approaches emphasize how social interaction and social contexts affect one's identity over time (Kroger, 2007). Sociological approaches assume that a person would have multiple identities and an individual's multiple identities are shared with others who are in the same group or play the same role in the society (Deaux, 2000). For example, I have two distinct identities, Asian and Christian. This ethnic and religious identity is shared with others who have the same ethnicity and religion. If I meet other Christians and talk about faith especially outside of church, I can easily recognize my religious identity. Although an identity can be shared with others, the meaning of an identity is unique for each person who shares the identity (Deaux, 2000). For example, someone who just started to attend church and someone who has worked as a Christian missionary for a while might have different meanings of being Christian. In addition, the sociological approach maintains that an individual can have a stable identity when social culture remains unchanged or when there are no conflicting social interactions that cause changes in the way of understanding himself

or herself (Deaux, 2000).

Symbolic interactionism is one of sociological traditions and it represents well how sociological theories approach personal identity issues (Deaux, 2000). Symbolic interactionism asserts that social activities form a person's identity. American social psychologist, George Herbert Mead, who set the foundation of symbolic interactionism mentioned that "a person is a personality because he [sic] belongs to a community, because he takes over the institutions of that community into his own conduct" (Mead, 1934, p. 7). Blumer (1969) maintained that "he acts toward himself and guides himself in his actions toward others; … the self-object emerges from the process of social interaction in which other people are defining a person to himself" (p. 12). Social interactions influence the way of acting toward the self and continuously redefines self (Charon, 2001).

Symbolic interactionism assumes that there are different sorts of identities (Charon, 2001) and Stryker (1980) used the terms "identity salience" and "identity commitment" to explain the different kinds of identities. Stryker (1980) mentioned that human beings have a hierarchy of identity salience; some identities are more outstanding than others to the individual all the time. Identity commitment means the degree to which a certain identity is more important when we interact with other people. For example, one identity – baseball fan, for example – is less salient generally, but has high commitment when I am watching a baseball game with my friends in a baseball stadium. If we can understand ourselves as objects in a situation, we can control the self (Charon, 2001). When we meet other people in a certain situation, we control ourselves according to their assumptions or expectations to ourselves; In addition, when the self is developed, the actor has power to control the self to a great extent.

Models of age-related changes in identity. I believe that the two models, Erikson (1982) and Whitbourne (2002), represent well how older adults experience age-related

changes in identity. Erikson (1982) proposed that older adults experience changes in their identity by solving the tensions between generativity and stagnation and between integrity and despair. Whitbourne (2002) argued that age-related changes in identities occur in the process of identity assimilation and identity accommodation.

Erikson understands identity development as eight psychosocial stages: trust vs. mistrust (stage 1), autonomy vs. shame and doubt (stage 2), initiative vs. guilt (stage 3), industry vs. inferiority (stage 4), identity vs. role confusion (stage 5), intimacy vs. isolation (stage 6), generativity vs. stagnation (stage 7), and integrity vs. despair (stage 8). It is important to know that the ego development in each stage cannot be achieved at one time, and conflicts in each stage are not resolved throughout the life; therefore, the outcome of each stage can be decided by a ratio between the positive and the negative developmental issues (Erikson, 1982). According to Erikson (1959), there is "a certain ratio between the positive and negative …, if the balance is toward the positive, will help him to meet later crises with a better chance for unimpaired total development" (p. 61).

Among the eight stages, the last two stages are particularly related to adulthood and late adulthood. In stage seven (generativity vs. stagnation), people who have a desire to take care of the future generation and contribute to the society achieve generativity; however, people who feel inertia and become self-indulgent fall into stagnation (Erikson, 1982). In Erikson's words (Evan, 1981), he uses the word generativity "because I mean everything that is generated from generation to generation: children, products, ideas, and works of art" (p. 51). The potential strength of stage seven is care. When a person achieves generativity, he or she will take care of somebody and care to do something (Evans, 1981).

In stage eight (integrity vs. despair), people who feel that their lives have been worthwhile and meaningful accomplish integrity; however, people who feel their lives have been unfulfilling and who have fear of death fall into despair (Erikson, 1982). The resolution

of integrity is achieved when people accept "one's one and only life cycle as something that had to be and that, by necessity, permitted no substitutions" (Erikson, 1963, p. 268). Integrity means taking responsibility for what one has been and one has done (Hamachek, 1990). The potential strength of stage eight is wisdom. Erikson (1982) described wisdom as "a kind of informed and detached concern with life itself in the face of death itself" (p. 6).

Whitbourne (2002, 2006) proposed the Identity Processes theory to explain how age-related changes in one's identity are negotiated through the processes of identity assimilation, identity accommodation, and identity balance (Whitbourne, 2002; 2006). Identity Processes theory defines identity as "broad biopsychosocial self-definition encompassing the individual's self-representation in the areas of physical functioning, cognition, personality, relationships, occupations, and social roles" (Whitbourne, 2006, p. 371). Whitbourne (2002) argued that this model is biopsychosocial because it combines age-related physical changes, psychological interpretations of aging process and sociocultural influences associated with socialization and the situations around individuals.

Whitbourne applied Piaget's concept of assimilation into adult identity and coined the term, identity assimilation. Identity assimilation means the analysis of new experience based upon existing identity (Whitbourne, 2006). When someone experiences a happening that is inconsistent with his or her identity, one may use identity assimilation. Through the process of identity assimilation, individuals can maintain positive self-attribution (Whitbourne, 2006). For example, a 65-year-old man has always thought of himself as a good driver but he has not actually driven his car in several months. One day, he drives his car to go somewhere and finds that he is not as agile as he remembered himself to be. If he uses identity assimilation, he attributes it to his not driving for a while, or to bad weather. He can still consider himself a good driver who probably needs to drive more often or be more careful in bad weather. Identity accommodation occurs when people continuously experience some situations that are

sufficiently distinct from the existing identities; Identity accommodation means revising identities (Whitbourne, 2002). The old man who continuously experiences difficulties with driving is convinced that his trouble is a sign that he has become too old to drive a car. Now his identity has changed from a good driver to an old man who has lost the ability to drive safely. The ideal state of one's identity is balance between identity assimilation and identity accommodation (Whitbourne, 2006). Through the process of identity balance, someone can recover from the feeling of disappointment which was caused by identity accommodation or begin to take steps to respond to age-related changes which were disguised by identity assimilation (Whitbourne, 2002).

Various factors affecting identities in late adulthood. Erikson, Erikson, and Kivnick (1986) conducted a qualitative research study about identity development in old age. The authors found that because parenthood has been one of the primary responsibilities of adulthood, their participants were still proud of their children's accomplishments and were satisfied with their children's good marriage (Erikson, Erikson, & Kivnick, 1986). In addition, older adults also have been envious of their children's achievements as well (Erikson, Erikson, & Kivnick, 1986).

Wthibourne (2002) maintained that regarding aging processes, the functioning of the body is a central feature of identity. All parts of the body are related to the biological functioning (Whitbourne, 2002). Appearance is regarded as a cue to age and in Western society most people want to disguise their aging (Whitbourne, 2002). The ability of the body to perform necessary tasks of everyday life is another significant feature of biological functioning. When someone recognizes one's body functions well, he or she feels the sense of competence. Cognitive function is also thought of as an area of physical functioning because it is related to the state of the brain.

Kroger (2007) described how diverse biological, psychological, and societal factors affect older adults' identities. First, normal aging processes and age-related diseases have an effect on older adults' identities (Kroger, 2007). When a person ages, biological changes naturally occur in several parts of the body such as appearance, circulatory and respiratory systems, bones and muscles, sensory organs, and nervous systems. In addition to this normal aging process, some, but not all older people suffer from chronic diseases. In 1999, more than 80 percent of adults who are 70 years and older have at least one chronic condition which often causes pain or distress (Hooyman & Kiyak, 2005). Second, in the psychological aspect, role changes may affect older adults' identities (Kroge, 2007). Most young-old adults (66-79 years) need to search for a new sense of satisfaction that can be substituted for vocational satisfaction after the loss of paid employment (Kroger, 2007). Old-old adults (age 80 and above) revise their sense of autonomy when their age-deteriorated body makes them rely on assistance from others (Kroger, 2007). Third, socio-cultural environments affect identities in late adulthood (Kroger, 2007). The lack of role models in current society negatively affects older adults' identity (Kroger, 2007). Because in the past, only a small number of people succeeded in living to late adulthood, older adults in the current society have few role models who can show successful ways of managing the demands of very old age. Ageism which is a prejudiced perspective of society toward older adults is also an important sociocultural element in shaping identities in late adulthood (Kroger, 2007). In the past, property was controlled by inheritance, elders who had ownership of property held the power. However, in current society social members unjustly stereotype older adults as feeble, slow, and bigoted. Such negative social prejudices prevent older adults from having positive identity (Kroger, 2007).

Kroger (2007) argued that because work means social interaction, personal satisfaction, generativity, and monetary needs, one of the great changes which may affect

older adults' identity is retirement. She maintained that the attitudes and values toward various life situations would determine continuity in identity in late adulthood. Relationships are another important element of identity in late adulthood (Kroger, 2007). Kroger insisted that having at least one peer group or confidante could affect one's identity. She also emphasized the value of a diversity of relationships on one's identity in old age because different relationships can fulfill different needs. These relationships could exist in late adulthood for practical assistance, sharing past experiences for a sense of continuity, and intimacy (Kroger, 2007). Relationships with younger people can increase one's sense of generativity, and also relationships with older cohorts may afford a good role model of aging (Kroger, 2007).

In particular, there are some studies dealing with special characteristics of identities in old women. Whitbourne (2006), especially, described the relationships between aging and identity of women. She argued that through the process of identity assimilation, women minimize or disregard experiences related to aging processes; and identity assimilation allows women to view themselves as competent and worthy of consideration (Whitbourne, 2006). Identity assimilation appears the primary method for older women to keep positive self-esteem while facing constant threats to existing identities (Whitbourne, 2006). However, sometimes women redefine themselves to be consistent with their experiences, rather than to keep enforcing their own views of themselves onto the events and other people who interact with them. Therefore, in later life women face a tension between maintaining and changing existing identity (Whitbourne, 2006). Compared to men, women fluctuate more sharply between pressures to newly define themselves in terms of changed criteria and the tendency to avoid negative social contexts to maintain existing identity. Kroger (2007) argued that men's shorter life expectancy and the social trend that women tend to marry older men make older women anticipate outliving their husbands. In particular, for women who suffer from

physical limitations and need to cope with new social roles after retirement, living alone makes identity adjustments more difficult.

Summary

In order to understand distinctive characteristics of older adult learners, age-related changes in body, cognition, and identities were discussed. The discussion began by what kinds of age-related changes in visionary sense, auditory sense, and nervous system occur. The effects of aging on intelligence and memory capacity and mechanisms of cognitive aging were examined. Two models of age-related changes in identities and various factors affecting identities in late adulthood were discussed to understand older adults' identities.

Older Adults' Computer Learning

The literature on older adults' computer learning and usage emanates from a number of disciplines such as education, gerontology, psychology, communication, and nursing. Among articles provided by ERIC, Academic Search Premier, and PsycINFO, this section will review literature which addresses the following issues: 1) literature analyzing the effects of older adults' computer learning, 2) studies investigating older adults' computer usage, and 3) materials identifying factors influencing older adults' computer use processes. Since 1990, computers have affected our daily lives, and most of the research on computers and older adults has been conducted since this time. Thus, this section will not review the literature which was conducted before 1990. A review of the literature on older adults' computer learning and use revealed four prominent themes: 1) the motivations and barriers of older adults' usage of computers; 2) identifying age-related differences in computer learning and usage; 3) suggesting instructional tips and design; and 4) changes in attitudes and benefits.

The motivations and barriers of older adults' usage of computers

Some literature has revealed why older adults use computers and the Internet and what the barriers are in their using computer technologies. Older adults use the Internet for

communicating, developing or maintaining relations, shopping, and searching for information. Older Canadians (60 years and older) mainly used the Internet to communicate with others; nearly all older Internet users (87%) used e-mail; they also searched for information on goods and services (57% of Internet users), news (54%) and health information (38%) through the Internet (Silver, 2001). Hilt and Lipschultz (2004) found that older adults (AR:age range=55-84) were most likely to use Google or Yahoo to search for sites containing weather, health, games, jokes, and entertainment information. For participants in this study, contacting family and friends through E-mail is often part of their daily lives (Hilt & Lipschultz, 2004). In the study of Tak and Hong (2005), almost all (92%) older adults with arthritis accessing the Internet used e-mail (92%), but only about forty percent searched for arthritis information through the Internet. Wright (2000) found that older adults proactively participated in on-line activities to build new relationships rather than just maintaining previous relationships and trying to receive support.

Other literature reported various reasons why older adults do not use computers or the Internet (Mann, Belchior, Tomita, & Kemp, 2005; Silver, 2001). For older computer users with disabilities, lack of need and computer knowledge, not having available training opportunities, feeling too complicated, and pain were the common reasons of not using computers often (Mann, Belchior, Tomita, & Kemp, 2005). Older Canadians (60 years and older) reported cost (26%), not having enough time (15%), and lack of skills or training (14%) as barriers to use the Internet when they do not have home access (Silver, 2001).

Identifying age-related differences in computer learning and usage

Many researchers in gerontology and the social science field have explored age-related differences in computer learning and usage. When researchers and trainers understand the older adults' difficulties in conducting computer-based tasks, they can study or develop specialized training and design methods for older computer users. Studies found that older

adults are slower and make more errors than younger adults (Kubeck, Miller-Albrecht, & Murphy, 1999; Marquie, Jourdan-Boddaert, & Huet, 2002; Mead, Sit, Rogers, Jamieson, & Rousseau, 2000; Moore & Zabrucky, 1995). Studies also revealed that the old-old age group is also less efficient at computer-related work than the young-old group (Echt, Morrell, & Park, 1998; Morrell, Park, Mayhorn, & Kelley, 2000). Studies comparing older adults with young adults revealed that older adults were slower and less accurate in learning or using computer skills and they were less confident in their computer knowledge than young adults. In the case of using the Internet in a natural setting, older adults (MA: Mean Age=70.6) needed more steps and were less accurate in finding information than young adults (MA=21.8) (Kubeck, Miller-Albrecht, & Murphy, 1999). Compared to younger computer novices (MA=21.30), older computer novices (MA=69.85) were less accurate in library search system usage (Mead, Sit, Rogers, Jamieson, & Rousseau, 2000). Younger adults (MA =22.93) took less time to read and recalled more information in computer-displayed texts than older adults (MA =71.35) (Moore & Zabrucky, 1995). Although younger (MA=68.7) and older adults (MA=22.59) showed similar results in memory recognition performances, older adults were less confident in their computer knowledge, even though they were sure they knew the answer (Marquie, Jourdan-Boddaert, & Huet, 2002).

Second, two studies revealed that the old-old age group was slower and made more errors than the young-old age group in performing computer-based tasks. During computer training, the old-old age group (MA=78.80) made more performance errors (missing steps, inappropriate additional steps, and incorrectly executing steps) and more motor control errors (mouse control and clicking errors), and needed more assistance and more time to finish training than the young-old age group (MA=68.24) (Echt, Morrell, & Park, 1998). After a basic computer training program, the young-old adults (MA=68.6) showed better results in using a computer bulletin board system than the old-old adults (MA=79.9) (Morrell, Park,

Mayhorn, & Kelley, 2000).

Suggesting Instructional tips and Design

Because of age-related changes in cognitive and physical functions, (Jones & Bayen, 1998; Mayhorn, Sronge, McLaughlin, & Rogers; 2004; Mead, Batsakes, Fisk & Mykityshyn, 1999; Schaie &Willis, 2002), older adults were slow and made more errors and were less likely to have self-confidence in their abilities. In order to make older adults learn or use computers more easily, much literature has suggested instructional tips and designs. First, specific support for older adults in the early stage of computer courses is important. When older learners failed to overcome such initial barriers as controlling the mouse and understanding the jargon, the learners tended to give up their lessons easily (Stephenson, 2002). Baldi (1997) also argued that some older adults had a fear of breaking the computers when they first used them. Before the first class, instructors can use a short attitude survey to identify those who are at risk of dropping out (Van Fleet & Antell, 2002). Explaining the benefits of using computers can give positive attitudes toward computers in the early stage of training (Baldi, 1997). Second, older adults-only classes and peer instructors are beneficial for older computer learners. Older adults believe that they are inferior to young adult learners; therefore, they feel incompetent when they take courses with young adults (Baldi, 1997; Redding, Eisenman, & Rugolo, 1998). Therefore, older adults only classes could encourage older adults to ask questions and feel more comfortable (Puacz & Bradfield, 2000). Age-peer trainers and assistants also can help older adults feel comfortable (Van Fleet & Antell, 2002; Redding, Eisenman, & Rugolo, 1998).

Third, using aid devices can be advantageous for older adults. Providing writing materials for taking notes and laminated index cards containing basic computer skills are suggested (Puacz & Bradfield, 2000). Senior-friendly printed materials having easy-to-read font types (such as Helvetica and Arial) and a large size with graphic illustrations would hold

older students' attention more (Bean & Laven, 2003). The American Library Association (2004) recommended using adjustable chairs to reduce pressure on back, monitors with one touch buttons for adjusting the brightness and contrast, and a trackball rather than the mouse to reduce the amount of force for performing mouse tasks. This study also suggested using Microsoft access features for older adults such as increasing the size of the icons and font size of Web pages, using a magnifier window, and changing the cursor blink speed and width.

Fourth, many studies recommended a variety of instructional methods especially designed for older computer users. It would be better for older adults to have more sufficient time or self-paced practice to master learning contents (Baldi, 1997; Filipczak, 1998; Van Fleet & Antell, 2002; Jones & Bayen, 1998; Mayhorn, Sronge, McLaughlin, & Rogers, 2004). Many studies suggested the benefits of a clear statement of learning objectives at the beginning of courses, well-defined learning units, and having sequenced assignments containing scaffolding concepts (Crow, 2002; Dunnett, 1998; Jones & Bayen, 1998; Mayhorn, Sronge, McLaughlin, & Rogers, 2004). Having smaller classes was recommended by many studies as well (Filipczak, 1998; Mayhorn, Sronge, McLaughlin, & Rogers, 2004). In addition, some studies developed special instructional methods for older adults. Hollis-Sawyer and Sterns (1999) found that when educators gave older adults task-specific feedback for achieving a set of performance goals for each training trial, older adults showed relatively better task proficiency and positive feelings of computer attitudes/efficacy. Morrell, Park, Mayhorn, and Kelley (2000) examined the effects of simple and expanded instruction methods for using a bulletin board for the young-old age group (MA=68.6) and the old-old age group (MA=79.9). Simple conditions consisted of text and illustrations in a step-by-step manner and expanded conditions contained additional information about how the bulletin board system works. In this study, older adults in both groups showed better performance when they learned through the simple instruction method.

Fifth, some studies provided suggestions for older adults' computer usage in their everyday lives. Mead, Batsakes, Fisk and Mykityshyn (1999) conducted a series of experiments about the ATM, web site navigation, and library database search studies and suggested reducing working memory demands and providing environmental support such as increasing target size in web-page and color-coding. It was hard for older computer novices to fully understand the goal specification function in the library search system (Mead, Sit, Rogers, Jamieson, & Rousseau, 2000). For example, older novices confused Title with Subject; therefore, the authors suggested using natural language in the search tool bar. For instance, libraries can use the word "about" rather than "topic."

Changes in Attitudes and Benefits

Many studies found that computer learning experiences bring positive attitudes toward computer-related technologies to older adults (Kelley, Morrell, Park, & Mayhorn, 1999; Lawton, 2001; Morris, 1994; Ogozaleck & others, 1994; Segrist, 2004). An intergenerational multimedia technology workshop made older students (MA=70.0) have positive attitudes toward multimedia technology and future classes (Ogozaleck & others, 1994). Older adults (ages 58-91) who were trained to use an electronic bulletin board system had positive attitudes toward computers (Kelley, Morrell, Park, & Mayhorn, 1999). After an introductory computer course, older adults (MA=67.4) dispelled negative attitudes toward computer technology and felt less marginalized in the technological society (Morris, 1994). Positive attitudes toward computer-related technology can be better enhanced by specially designed courses. When older adults (MA=68.4) received computer instruction designed uniquely for older learners' needs and learning results, the participants appeared to develop more positive attitudes in the area of efficacy, interest, and utility toward computers compared to older adults who received traditional computer instruction (Lawton, 2001). Segrist (2004) found that after direct and customized computer training, older adults felt more

comfortable with the computer and its use. The author explained that the special training design, allowing a ratio of one instructor to a maximum of seven students, made older adults feel comfortable in using computers.

There are other studies that explore the benefits of computer learning and usage for older adults in special circumstances (Cody, Dunn, Hoppin, & Pamela, 1999; Lawhon, Ennis, & Lawhon, 1996; McConatha, McConatha, Deaner, & Dermigny, 1995; Millar & Falk, 2000; Swindell & Vassella, 1999). Nursing home residents who had computer training showed improved scores in the Activities of Daily Living scale, the Geriatric Depressions scale, and the Mini Mental State Exam (cognitive function) (McConatha, McConatha, Deaner, & Dermigny, 1995). Cody, Dunn, Hoppin, and Pamela (1999) found that older adults residing in assisted living facilities and independent living facilities who learned how to use Web-TV had positive attitudes toward aging, increased levels of perceived social support, and reduced anxiety about technology. The Internet can also be a medium of delivering meaningful learning experiences for older adults (over 55) who perceive themselves as isolated because of transportation problems, disability or health problems, and caregiver roles (Swindell & Vassella, 1999). Disabled and ill seniors can meet their special needs when they use online shopping services and access health-related information by using technology-devices such as a head-controlled keyboard/mouse and text-to-speech software reading documents aloud (Lawhon, Ennis, & Lawhon, 1996). Millar and Falk (2000) maintained that online technology can reduce the service limitations on literacy education and numeracy practices for older adults who live in rural areas.

In addition, many studies revealed a variety of benefits for general older computer users (Dunning, 2005; Karavidas, Lim, & Katsikas, 2005; Lawhon, Ennis, & Lawhon, 1996; Lee, Godbey, & Sawyer, 2003). Karavidas, Lim, and Katsikas (2005) found that when retirees (MA=72) have more computer knowledge, they have higher self-efficacy and lower

computer anxiety. In this study, high self-efficacy and lower computer anxiety partially led to high life satisfaction. This study can conclude that when older adults have more knowledge of computer uses and they can use computers successfully to search for information and to make contact with families and friends, their self-efficacy, a feeling of competence of one's ability, increases. Using computers and the Internet can enhance older adults' self-esteem and short-term memory, and encourage them to be more social (Lawhon, Ennis, & Lawhon, 1996). Older adults may experience the loss of their leisure engagement, because of physical illness or social disconnection induced by retirement. However, through the Internet, older adults can develop new companionships with people who share the same leisure interests (Lee, Godbey, & Sawyer, 2003). Internet usage can provide lifelong learning opportunities to older adults with cognitive and physical limitations and can also increase their emotional relationship with families and friends (Dunning, 2005).

Summary

The review of literature dealing with older adults' computer learning and computer usage has been conducted to have a sense of what kinds of themes has been examined in this area. The review found that literature in this area examined numerous motivations and barriers of older adults' using computers, age-related declines in the abilities to use computers, several suggestions for efficient instructions and designs, and changes in attitudes toward computers and benefits of using computers.

Situated Learning

Situated learning theory emphasizes what really happens in learning situations. Learning is a social practice. In learning sites, individuals do not learn by themselves. Learners interact with peer learners, instructors, and various physical features in the environment such as learning tools or the size of classrooms. In addition, individuals' learning processes cannot exist without broader social influences that are pervasive beyond

37

classrooms such as culture, conventions, and regulations. In addition to an emphasis on the

social aspect of learning, situated learning theory also focuses on the contexts in which

learners are situated. Because individual's cognitive activity is "stretched across mind, body,

activity and setting" (Lave, 1988, p. 18), learning needs to be understood as something which

is rooted in a certain context. This section will describe the major tenets of situated learning,

communities of practice, and individuals' identity issues in a situated learning perspective.

The Major Tenets

Situated learning theory is derived from situated cognition theory (Lave, 1988). In a

situated cognition perspective, it is not sufficient to say that the situation affects individuals'

cognitive actions; however, situated cognition understands knowing as relations between

individual's cognitive process and situations (Greeno, Smith, & Moore, 1993). Therefore,

knowing always varies depending on situations. Situated cognition theory understands

knowing is an ability to interact with things and other people in situations; and in this

perspective, learning means improvement in this ability (Greeno et al., 1993). Therefore,

situated learning theory focuses on how individuals improve their abilities to "interact with

things and other people in a situation" (Greeno et al., 1993, p. 100).

Situated learning theory has been developed from two traditions: Vygotskian

sociocultural theory and educational anthropology (Kirshner & Whitson, 1997b, p. 100).

Vygotskian sociocultural theory emphasizes learning is a social phenomenon and educational

anthropology highlights that learning is deeply embedded into situations. First, Vygotsky

(1978) emphasized interactions between socio-cultural environments and individual learners.

In particular, his concept of the zone of proximal development highlights how communal

influences around individual learners can precipitate or retard personal cognitive

development. Like Vygotskian sociocultural theory, situated learning theory also highlights

social influences around individual learners rather than the cognitive process which occurs

within individuals' brains. Second, another tradition that influenced the development of situated learning theory is educational anthropology (Lave, 1985, 1988; Lave & Wenger, 1991). Describing how ordinary people learn outside of the classroom emphasizes individuals' multifaceted ways of learning and provided empirical evidence for situated learning theory (Kirshner & Whitson, 1997b). For example, Lave (1988) studied how adults solve math problems in a culturally structured setting, the supermarket. Lave found a large difference in success between the arithmetic test in the classroom (average success rate was 59%) and those in a real supermarket situation (98%). Lave argued that "cognition observed in everyday practice is distributed – stretched over, not divided among – mind, body, activity, culturally organized settings" (p. 1).

As a blended theory of Vygotskian sociocultural theory and educational anthropology, situated learning theory emphasized learning processes as a social and situated activity which cognitive learning theory has neglected (Kirshner & Whitson, 1997b). First, *situated learning theory understands that learning is rooted into situations where learning occurs* (Schell, 2005). Brown, Collins, and Duguid (1989) argued that situations can be said to co-produce knowledge through activity, so it is possible to argue that learning and cognition are fundamentally situated. According to them, knowledge and cognition are products of the activity, context, and culture in which they are developed and used. Because theories of situated cognition believe that knowledge is fundamentally located in situations, the question of learning transfer is a major issue. Lave (1988) criticized the notion that "knowledge is conceived as a set of tools stored in memory, carried around by individuals who take the tools out and use them … that tools are designed to resist change or destruction through the conditions of their use" (p. 24). In a situated learning perspective, transfer, which means how learning in a situation can affect one's ability to engage in another situation, must be understood as a matter of the nature of situations (Greeno, Smith, & Moore, 1993). Situated

learning theory assumes that learning should be understood as participation in interactive systems among individuals, other people, and materials; therefore, transferring knowledge is dependent on the "consistency or inconsistency of patterns of participatory process across situations" (Greeno, 1997, p. 12). Second, *situated learning theory also emphasizes that learning is a social practice* (Schell, 2005). Lave and Wenger (1991) argued that "[i]n our view, learning is not merely situated in practice – as if it were some independently reifiable process that just happened to be located somewhere; learning is an integral part of generative social practice in the lived-in world" (p. 35). Wenger (1998) also noted that "we interact with each other and with the world and we tune our relations with each other and with the world accordingly. In other words, we learn" (p. 45). Kirshner and Whitson (1997a) maintained that learning and knowledge occurs in a local, subjective, and socially constructed world, and situated learning theory would provide a model that deals with knowledge and learning as a social and cultural process. Because situated learning theory understands learning as a social practice, communities to which individual learners belong have been important analysis units (Lave & Wenger, 1991; Wenger, 1991).

The concept of "legitimate peripheral participation" by Lave and Wenger (1991) described well how individuals participate in learning activities through a situated learning perspective. Lave and Wenger (1991) argued that when newcomers first come to a community of practice, their participation is just peripheral. Then, they come to interact with other members of the community and become aware of the rules and language in community. Finally, they become full participants in a community of practice. When learners master certain knowledge or skill, they become able to fully participate in the socio-cultural practices in a community. "As a way in which the related conflicts are played out in practice, legitimate peripheral participation is far more than just a process of learning on the part of newcomers. It is a reciprocal relation between persons and practice" (p. 116). To become a full member of

a community of practice, a newcomer needs to participate in a variety of activities in the community and to closely interact with other existing members, information, and resources. Therefore, Lave and Wenger (1991) argued that "learning must be understood with respect to a practice as a whole, with its multiplicity of relations – both within the community and with the world at large" (p. 114).

Communities of Practice

Because situated learning theory understands that learning is rooted in contexts and a social practice, communities of practice, in which learning occurs, have received attention (Lave & Wenger, 1991; Wenger, 1998, 2000; Wenger & Snyder, 2000). "Communities of practice" can be defined as "groups of people informally bound together by shared expertise and passion for a joint enterprise" (Wenger & Snyder, 2000, p. 139). Communities of practice are the basic elements of social learning system because they determine components of competence in a certain context (Wenger, 2000). Although an individual can be competent in a community of practice to which one has belonged, he or she is a novice in a new community of practice.

Because I think my experiences are helpful for explaining the concept of communities of practice, I will briefly describe it first. When I was an undergraduate, I was a committee member of a young adult ministry. The committee consisted of six members, and each member had a different job description, such as treasurer, secretary, or director. Our term of service was one year and the general jobs of committee member were planning and managing regular and special church activities, such as worship and retreat. The committee had two regular meetings per week (on Saturday and Sunday) and committee members had several unscheduled gatherings. I will explain Wenger's (1998) concept of communities of practice by relating it to my experiences in a community of practice.

Wenger (1998) argued that there are three dimensions of communities of practice; mutual engagement, joint enterprise, and shared repertoire. First, what causes a community to be coherent is the mutual engagement of community participants. A community of practice cannot exist if participants are not engaged in actions and if they do not interact with each other. A regular meeting composed of all six members and frequent unscheduled gatherings composed of two or three members made the committee share the same experiences. Through mutual engagement in shared experience, not conceptual thinking, the committee became a community of practice. Wenger argued that diversity among participants in communities of practice is as important as homogeneity. When participants in a community of practice work together, they experience differences and similarities. Because participants are not homogeneous, they have different competence, and knowing others' competence is as important as knowing one's own competence. "Because they belong to a community of practice where people help each other, it is more important to know how to give and receive help than to try to know everything yourself" (p. 76). Wenger maintained that when mutual engagement is sustained, it creates close relationships among people. Deep relationships sometimes cause negative feelings among participants such as conflicts, disagreements, challenges, and competition, which are all forms of mutual engagement.

The second feature of practice as a resource of community of practice is a joint enterprise (Wenger, 1998). When participants in communities of practice are mutually engaged, as a result they come to develop an enterprise defined by the participants. When participants respond to their situations and the demands around them, they create their own negotiated enterprise. The committee members used to work following the college ministry's conventions or the demands of pastors. However, conventions and demands did not create the committee's enterprise; rather, what we did was actually defined by the committee members themselves. When we organized a summer retreat, the church already set a theme for the

42

retreat and we had conventions such as the number of Bible study meetings and outdoor activities. Under these tight institutional constraints, committee members negotiated when we would have Bible study or what kinds of game we would have for outdoor activities. What the committee members did while responding to the various situations was a joint enterprise in communities of practice. Wenger maintained that communities of practice grow in historical, social, and institutional contexts with detailed resources and limitations. The job of the committee members resides in the special history and culture of our ministry. Also some regulations of the church and expectations from the ministry members influenced the committee. In those historical, social, and institutional contexts, we created our own ways of working effectively and responding to demands of church and ministry members.

A shared repertoire is the third characteristic of practice which brings coherence to a community. The repertoire of a community of practice means "a community's set of shared resources" (Wenger, 1998, p. 83) and it includes "routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions, or concepts that the community has produced or adopted in the course of its existence, and which have become part of its practice" (p. 83). The repertoire of a practice has two combined characteristics; it reflects mutual engagement in the past and it is engaged with a future situation. A shared repertoire is useful not only because it makes a history of mutual engagement recognizable, but also because it can be re-engaged in future situations. Before beginning to work as a committee member, I received documents that were created by past members. Those documents, one of the shared repertoires, described how members in the past years prepared activities and contained many resources that the past years' members used. On the one hand, these documents reflected a history of mutual engagement, but on the other hand the documents helped me organize and plan future activities.

Because at the individual level, learning means to be more competent, understanding competency in communities of practice is important. Three dimensions of communities of practice, mutual engagement, joint enterprise, and shared repertoire, define competence in communities of practice (Wenger, 2000). First, because members develop their community of practices through mutual engagement, to be competent means to develop deep mutuality and to be trusted as a partner by other members. Second, members have shared perception of what their community is about and each of them is responsible for its joint enterprise. To be competent means to understand the joint enterprise well enough to be able to add value to it. Third, communities of practice have formed a shared repertoire of mutual resources-language, artifacts, tools, and stories. Therefore, to be competent means to be accessible to this repertoire and be able to use it properly.

Individuals' Identity Issues

Why do we need to look at individuals' identities while reviewing situated learning theories? Wenger (1998) maintained that individuals, as members of social communities, build their identities when they negotiate the meanings of their experiences in communities. Thinking about identity from a social learning perspective makes us think how we can understand "individuality as something that is part of the practices of specific communities" (p. 146). An individual's practices always happen in a community where members engage with each other and each member recognizes the others as participants. Therefore, "practice entails the negotiation of ways of being a person in that context .... our practices deal with the profound issue of how to be a human being. In this sense, the formation of a community of practice is also the negotiation of identities" (p. 149).

Situated cognition theory maintains that through learning activities, learners are deeply interactive with the learning situation; therefore learners' identities can be newly formed thorough learning practice. Situated learning assumes that "agent, activity, and the

world mutually constitute each other" (Lave & Wenger, 1991, p. 33). Because knowing is an act of belonging in situated learning theory, our identities come to change when we are engaged with knowing processes (Wenger, 2000). When we understand learning as social practice, learning engages the whole person with relation to not only specific activities but social communities; through learning processes, people become a full participant and a member of communities of practice (Lave & Wenger, 1991). "We have claimed that the development of identity is central to the careers of newcomers in communities of practice, … learning and a sense of identity are inseparable: they are aspects of the same phenomenon" (Lave & Wenger, 1991, p. 115). Thus, learning means having different identities in terms of new relations among activities, tasks, functions, and understanding (Lave & Wenger, 1991). "To ignore this aspect of learning is to overlook the fact that learning involves the construction of identities" (Lave & Wenger, 1991, p. 53).

Lemke (1997) defined a human community as "an ecosocial system" where people interact with other people, tools, artifacts, and other species. In this system, a human being is "a hybrid of both material body and social-culture persona, a body-subject" (p. 42). In this ecosocial system, human beings tend to build their identity while interacting with other parts of the ecosocial system. Lemke maintained that through participating in a community of practice, "individual identities are constructed across the whole trajectory of participation" (p. 44). In addition, Greeno (1997) argued that internal cognitive theories believe social and individual subskills are distinguishable and emphasize acquiring knowledge and skills; however, situated cognition theories value learners' growth of identities and social practice. According to Greeno, situated cognition understands learning as "progress along trajectories of participation and growth of identity" (p. 9). Situated cognition theory also assumes that methods of instruction are not only tools for acquiring skills; through participating in methods of instruction, students "develop … their identities as learners, which include the

ways in which they take initiative and responsibility for their learning" (p. 9).

Wenger argued that in communities of practice identity has the following five characteristics: identity as negotiated experience, as community membership, as learning trajectory, as a nexus of multimembership, and as a relation between the local and the global. First, we form our identities both while we participate in communities of practice and while we and other participants reify ourselves. Identity is not a self-image or abstract concept; rather we form our identities when we understand who we are thorough everyday lives and when others give us concrete messages of who we are. Second, when we are a member of a community of practice which is familiar to us we can manage ourselves completely. However, when we are engaged in new practices which are unfamiliar, we feel a lack of competence; therefore, our non-membership also builds our identities. In short, "we know who we are by what is familiar, understandable, usable, negotiable; we know who we are not by what is foreign, opaque, unwieldy, unproductive" (Wenger, 1998, p. 153). Our identities are composed of not only who we are but also who we are not. Third, identity is not an object that already exists or something we obtain at a certain point. Rather, identity is "something we constantly renegotiate during the course of our lives" (p. 154). Fourth, because individuals belong to many communities of practice, identity is composed of various forms of membership. For example, I am a graduate student but at the same time I am a son. Although I spend most of my time at a school, I cannot turn off my identity as a son. When I talk with my parents by phone, their love for me encourages me to concentrate on my studies. Wenger (1998) believed that because in different communities of practice we build different aspects of ourselves, we need to reconcile our various forms of membership. The work of reconciliation is a very unique and personal process, and it involves continuous tensions that can never be resolved. Fifth, an identity is an interplay of both local and global activities. Our practices have both local and global aspects. For example, my writing a dissertation appears

to be a personal activity; however, in writing a dissertation I am also engaged in a more global level by interacting with dissertation committee members and understanding the regulations of the graduate school. Like a practice, an identity is not just local but linked to broader groups.

Wenger (2000) argued that an individual's identity is important to communities of practice for the following three reasons. First, an individual's identity decides what matters, with whom we interact, and whom we trust in communities of practice. Second, because learning means being involved with other practices or people, opening up one's identity to other ways is important. Third, when an individual belongs to several communities, he or she experiences the boundaries among communities in a personal way. Developing an individual's own identity create bridges across communities.

Wenger (2000) proposed three dimensions of healthy identities in communities of practice: connectedness, expansiveness, and effectiveness. First, a healthy identity means deep relations with other members through "shared histories and experiences, reciprocity, affection, and mutual commitments" (p. 239). Second, healthy identities do involve multimembership and seek a wider range of new experiences. Third, healthy identity also means social participation and action rather than marginalizing.

Situated Learning and Adult Education

Traditionally adult educators have emphasized the role of experience, because they believed that meaningful adult learning would occur when learning was connected with learners' prior experience and everyday problems (Knowles, 1990). Wilson (1993) maintained that in traditional adult education, educators encourage learners to learn from their own experience; however, in a situated learning perspective, adults learn within their experience and situation. Wilson argued that situated learning theory "promises to provide a much sounder footing for our education effort by giving face and form to the longstanding

adult education tradition of locating learning in experience" (p. 79). By adapting situated learning theory, adult educators can understand adult learners better beyond the limits of individual psychology which is taken out of real life experiences (Merriam & Brockett, 1997).

Situated learning theory intersects with adult education practices in the following ways. First, situated learning theory enables adult educators to focus on components of learning situations with which individual learners interact. Several adult education literature adapting situated learning theories articulated situational factors with which adult learners interact. Wilson (1993) listed three elements that shape individuals' knowing: social interactions, learning tools, and interaction with setting. He argued that "learning and thinking in the everyday world are typically social activities …. Adults' ability to think and learn are profoundly structured by the availability of situationally provided tools … Human thinking is profoundly structured by interaction with the setting" (p. 72). Wilson argued that "part of the promise of situated cognition lies in providing a definition of situational elements that structure adult cognition in important ways" (p. 76). Hansman (2001) also articulated that there are four components that structure learning: interactions among learners, the tools they use within social interactions, the activity itself, and the social context where the activity takes place. She asserted that learning always takes place with other people, learning tools assist or structure the cognitive process, and the setting interrelates with social activity and tools.

Second, situated learning theory emphasizes how adult learners interact with situations outside of the classroom rather than what instructors plan and teach in classroom. Hansman and Wilson (2002) argued that adult educators who misunderstood situated cognition regard learning contexts as inert background that does not interact with individuals' learning process in a substantive way. Situated learning theory shifts our attention away from individual learners' internal cognitive processes to authentic situations which individuals will face

(Taylor & Boulton, 2004). For example, Schell (1999) developed the "Contextual Teaching and Learning" method to assist pre-teachers in making connections between learning contents and real world situations. The method of cognitive apprenticeships is one way of making connections between learning and authentic situations where adult learners are situated.

In practice, the situated cognition view can be used in the adult learning process through cognitive apprenticeships (Merriam, Caffarella, & Baumgartner, 2007). Wilson (1993) mentions that theories of situated cognition locate the practice of adult education in authentic activity. The approach of cognitive apprenticeship is "the development of concepts out of and through continuing authentic activity" (Brown, Collins, & Duguid, 1989, p. 39). Cognitive apprenticeship allows people to learn how to cope with particular types of tasks or problems in a real situation. Brandt, Farmer, and Buckmaster (1993) suggested the five-phase model of cognitive apprenticeship:

(1) modeling – to observe performance of total activity, (2) approximating – to approximate doing the real thing and articulating its essence, (3) fading – to continue to approximate the real thing, (4) self-directed learning –to practice doing the real thing alone, and (5) generalizing –to discuss the generalizability of what has been learned (p. 71).

Through cognitive apprenticeship, learners can acquire, develop, and use cognitive tools in authentic domain activity (Brown et al., 1989, p. 39). According to Merriam and Caffarella (1999), the outcomes of cognitive apprenticeships are these two: (1) learners can solve the problem by themselves through internalizing what has been learned, and (2) learners can generalize their learning into similar situations and use their learning as a starting point for new learning.

Summary

Situated learning understands that learning is fundamentally social practice and it is deeply embedded in contexts where learning occurs (Schell, 2005).   In a situated learning perspective, communities of practice has been regarded a key unit of analysis to understand how an individual learns. Communities of practice have three dimensions; mutual engagement, joint enterprise, and shared repertoire. In communities of practice, an individual participant experiences changes in identity. Situated learning theory allows adult educators to pay more attention to situational factors with which individual learners interact and the real contexts where adult learners are situated.

Culture of South Korea

Guy (1999a) insisted that "culture is omnipresent and is essential to human social life" (p. 7) and Guy (1999b) also argued that culture plays an essential role in shaping the process of adult education. Merriam and Mohamad (2000) argued that "the nature of learning engaged in by older adults will also reflect the particular cultural context in which it takes place" (p. 46). After reviewing cross-cultural studies, Wang (2006) concludes that because East Asian countries have been influenced by Confucianism, Confucian values instill particular attitudes and learning behaviors in Asian learners that are different from those of American learners. Among East Asian countries, South Korea is the most Confucian country (Koh, 1996).

In order to understand how cultural values affect the learning process of Korean older adults, the main tenets of Confucianism should be discussed. Confucianism is considered as a type of humanism rather than a religion, and it tries to bring harmony in the community and build social ethics rather than focusing on spiritual matters such as life after death (Clark, 2000). Confucianism was the ruling ideology of the Chosun Dynasty (1392-1910); therefore, it has been influencing Korean ways of thought for centuries. Although Confucianism lost

some influence as the ruling ideology after the fall of Chosun Dynasty in the early twentieth century, it is still easily recognized in today's daily life. Confucianism is still a living system of values in modern Korean society (Clark, 2000). Confucianism assumes that people are created unequally and cannot have equal rights throughout their lives (Clark, 2000). Confucianism articulates five important relationships in life: (1) ruler and subjects, (2) father and son, (3) older and younger, (4) husband and wife, and (5) friend and friend. Except for the relationship between friend and friend, in all other relationships the weaker should respect the stronger and the stronger should protect the weaker (Clark, 2000). When an individual accepts his or her defined role and responsibilities, family and community can be harmonious.

These beliefs about relationships affect the interactions between instructors and learners. Students believe teachers have authority and they are the primary source of knowledge (Wang, 2006). Confucians believe that "teacher, parent, and king should be treated equally and have the same importance in one's life" (Kee, 2005, p. 471). Therefore, the teacher always leads the class and students are not encouraged to ask questions or express their opinions (Wang, 2006). Liu (2001) states that Asian students in U.S. universities tend to obey the teacher blindly and feel guilty in expressing their disagreement with the teacher.

Confucianism teaches that the interests and desires of an individual are not as important as the wellbeing of the group; when an individual's need conflicts with that of the group, he or she is expected to think first of what is good for group (Clark, 2000). Harmony in the community is always more important than the achievements of an individual. This Confucian belief affects the relationship with other students. Wang (2006) mentions that Asian students try to work out the differences among students quietly and believe that dealing with open conflicts is not appropriate. In order to maintain harmony among learners, Asian learners tend to rely on the capable peers in the group and follow the common opinions of the group without critique (Wang, 2006).

In Confucianism, saving face is very important. Because people in Confucianism believe that every behavior or words impact one's sense of propriety, self-respect, and honor, people are very sensitive to their own behavior and others' responses (De Mente, 1999a). Thus, protecting one's face or face of one's family has a significant influence in culture and Korean language in general (De Mente, 1999a). Face saving often is more important than practicality, rationality, and truth (De Mente, 1999a). Therefore, speaking candidly becomes forbidden and especially direct criticism toward superiors is prohibited. Because open and critical discussion of matters is not appropriate, Confucianism assumes that saying or doing nothing is safer than changing matters. Because face saving is still very important to Koreans, they are still cautious in their speech and behavior and try to make sure that everyone is in a state of peaceful mind (De Mente, 1999a). Thus, saving face is important in all social settings including the classroom.

In addition, Confucianism imposes many limitations on the freedom of women (Clark, 2000). In Chosun Dynasty, Korean women had to practice the "three submissions;" before marriage they have to submit to their father; when their husbands are alive, they have to submit to their husbands; and after their husbands die, they have to submit to their sons (Clark, 2000). In Chosun Dynasty, women in upper class level were supposed to stay in isolation in their houses and should not be seen by men outside the family (Clark, 2000). Women were only allowed to go out at night during a curfew when men were restricted to stay at home (De Mente, 1999b). Some Korean people understand that the reason for confining women to their home and restricting them from associating with males outside their families is that the social system defines the role of women as within the home while the realm of the male is outside the home (De Mente, 1999b). However, interestingly women who are past childbearing age achieved some kind of freedom in their behaviors (De Mente, 1999b). Although these women are not supposed to be in contact with unrelated men, they

may go out in public and indulge in some behaviors, including smoking and drinking, which are forbidden to younger women (Clark, 2000).

Because Confucianism still heavily influences behaviors, values, and attitudes of Koreans, understanding Confucianism is necessary to study social interactions in the classroom. Because a teacher is an authority figure in the classroom, students may not ask questions often or may be reluctant to speak out their opinions. A face saving culture may constrain students from admitting in public that they do not understand what they are supposed to know; thus a face saving culture may bring some deficits of learning for some students. In Confucianism, an older person has more power than a younger person and this cultural background may hinder younger students from participating in classroom activities. In addition, because traditionally, women have not been allowed to associate with men, women may feel uncomfortable when they have interactions with male students; therefore, there may not be many social interactions between male and female students in the classroom. In addition, the intersection of age and gender in the classroom may cause some hierarchy of social intersections among students. Older and male students may have the most power and younger and female students may have the least power in the classroom. Therefore, younger and female students may not express their opinions in front of older and male students.

Chapter Summary

As one ages, an individual experiences physical and psychological changes. With aging, changes in vision the auditory sense, and nervous system occur, and these changes influence one's learning abilities. With aging, intelligence also changes, but the Seattle Longitudinal Study found that many older adults could maintain their mental abilities. There are age-related differences in short-term and long-term memory and retrieval processes. Slowing processing speed, deteriorated working memory, and deficits in sensory organs may lead to age-related differences in cognitive functioning. The literature reviewing older adults'

53

identity argues that the aging process bring changes in older adults' identity.

Within the context of these kinds of age-associated changes, older adults use computers and participate in computer learning programs. A review of older adults' computer learning and usage indicates that older adults have age-related differences compared to young adults. However, the literature found various benefits of using computers for older adults and suggested teaching strategies to minimize age-related declines in computer learning and usage.

In most cases, computer learning programs for older adults occur in face-to-face classrooms. In order to fully understand older adults' computer learning that usually occurs in real classrooms, we need to look at this practice using a situated learning perspective. A review of the situated learning literature indicates that learning is a social practice and situated in a learning context. When an individual interacts with situations and other learners, he or she experiences changes in identity. Understanding older adults' computer learning through a situated learning perspective will show how learning is embedded in situations and social practice, and how individuals experience changes in their identities.

Confucianism still heavily influences Koreans' behaviors, values, and attitudes in the classroom. Because Confucianism insists that teachers are authority figures, learners may be reluctant to oppose the opinions of their teachers or to express their opinions during the class. In addition, a face saving culture may not allow learners to admit publicly, when they do not understand the learning contents. In Confucianism culture, a younger person has less power than an older person; therefore in the classroom, younger students may not participate in classroom activities or publicly express their opinions. Because Confucianism proposes that women should not be in contact with men outside family, in the classroom there may be limited social interactions between men and women.

CHAPTER THREE

METHODOLOGY

The purpose of this study was to understand how Korean older adults' computer learning in face-to-face classrooms is situated in a social context and how this learning influences older adults' sense of identities. The following research questions guided this study: 1) How is computer learning of older adults embedded in the learning context in terms of social interaction, learning tools, physical environment, and Korean culture? 2) How do computer learning experiences influence older adults' identities? This chapter describes the methodology that was employed to explore these questions. This chapter is organized into the following seven sections: the design of the study, sample selection, data collection, data analysis, validity and reliability, assumptions and limitations, and a chapter summary.

Design of the Study

The key philosophical assumption underlying qualitative research is that meaning is created by individuals' interactions with their world (Merriam, 1998, 2002; Merriam & Simpson, 2000). Therefore, qualitative research assumes that the meaning associated with an object or event can be different according to the individual's perspective or situation. When a teacher teaches the same content in a certain classroom, the meaning associated with the content is different in terms of how each student understands and interprets it. Even if the same teacher teaches the same content to the same student, the meaning of content may differ according to when the class takes place or the mix of other members of the class. Thus, meaning is not the fixed or predictable phenomenon that is assumed by positivistic research.

Qualitative research assumes that reality does not exist outside of researchers and research participants; instead, reality exists within human interaction (Esterberg, 2002). According to the assumptions of qualitative research, the social world does not have a regular or predictable order or laws that determine human behavior. Because human behavior exists

within context, social researchers cannot discover universal patterns of human behavior regarding certain objects or events (Esterberg, 2002). Qualitative researchers believe that the best way to study reality is to ask people about their subjective experiences and to listen to their opinions (Auerbach & Silverstein, 2003). In contrast, quantitative researchers assume that people's meanings are roughly the same and that through research they can find or develop universal theories or hypotheses governing human thoughts or behavior (Auerbach & Silverstein, 2003). Therefore, quantitative research assumes that social research must be objective and that researchers' cultural and socioeconomic backgrounds must be eliminated. Qualitative research, however, assumes that in the social sciences, pure objectivity is impossible (Esterberg, 2002). Because an individual's meaning is constructed in relation to other people and contexts, reality in the social sciences cannot be predicted by universal laws.

A qualitative design best fits my study because it allows me to explore in-depth influences of situational factors of computer classrooms and changes of older adults' identities due to participation in computer learning classes. The first characteristic of qualitative research is that the goal is to understand meanings that participants construct (Bogdan & Biklen, 1998; Merriam, 1998, 2002). Qualitative research assumes that each participant in a study has unique meanings of the same object or event that are constructed by his or her interactions and contexts. In other words, qualitative researchers are interested in the participant's perspective (Bogdan & Biklen, 1998). My study focuses on the meaning of participation in computer learning for each participant, and each learner's interaction with the learning situation.

The second characteristic of qualitative research is that it is an inductive process (Auerbach & Silverstein, 2003; Bogdan & Biklen, 1998; Merriam, 1998, 2002). Qualitative researchers assume that participants having direct experience with a certain phenomenon are experts on that phenomenon (Auerbach & Silverstein, 2003); therefore, qualitative

56

researchers try to learn from participants rather than strive to test hypotheses developed

through a review of literature (Creswell, 2005). Qualitative researchers do not assume that

they already know what is important before starting the research (Bogdan & Biklen, 1998),

nor do they begin to collect data with a predetermined instrument to measure relationships

among variables (Creswell, 2005); they instead gather data, analyze it, and build a theory

inductively. The initial research questions sometimes change when researchers gain new

insights into a phenomenon during data collection (Creswell, 2003). Qualitative research is

used to explore research areas that are not dealt with in previous research and that are not

explained by an existing theory (Creswell, 2005; Merriam, 2002). Because I assume that

older computer learners have diverse experiences and interpretations, the inductive

characteristics of qualitative research allow me to listen to each participant's experience of

computer learning in order to understand the influences of situational factors and changes in

older adults' self-identities.

The third characteristic of qualitative research is that the researcher is the key

instrument of data collection and analysis (Bogdan & Biklen, 1998; Merriam, 1998, 2002).

The qualitative researcher tries to understand how participants construct their meanings in a

natural setting, entering or participating in participants' natural settings and often spending

significant time there. Qualitative researchers collect data and sometimes analyze or interpret

it immediately. Because the researcher is the major instrument of data collection and analysis,

bias can be a shortcoming of qualitative research in terms of positivist perspectives (Merriam,

2002). However, qualitative research assumes that subjectivity is an essential part of human

interaction and cannot be totally eliminated (Auerbach & Silverstein, 2003). Instead,

qualitative researchers identify their subjectivities and discuss how these subjectivities may

influence the process of data collection and analysis (Merriam, 2002). In addition, Auerbach

and Silverstein (2003) noted that researchers' subjectivities can be an important source of

information. In order to understand how older adults' computer learning is a social practice and embedded in the learning context, I entered the participants' natural settings and spent significant time because I am the most appropriate research instrument for collecting and analyzing data. In addition, in order to understand how an individual's identity has been developed through participation in computer learning classes, a researcher who has rapport with participants and directly interacts with them would be the best way to gather and analyze data.

This study is also a qualitative case study. The case study is an appropriate research design when "a how or why question is being asked about a contemporary set of events over which the investigator has little or no control" (Yin, 1994, p. 9). When researchers are interested in insight, discovery, and interpretation or a case, rather than testing a hypothesis, they use qualitative case studies (Merriam, 1998). Focusing on a single entity (the case) enables researchers to reveal "the interaction of significant factors characteristic of the phenomenon" (Merriam, p. 29). Yin (1994) maintained that researchers would use the case study design when they want to explore contextual conditions and believe that contextual conditions are highly relevant to the phenomenon of study. Because I am interested in the context of a computer course and believe that learning contexts are highly pertinent to learning processes, a case study design is suitable. Merriam (1998) understood the case as "a thing, a single entity, a unit around which there are boundaries" (p. 27). If the phenomenon which a researcher tries to understand is not intrinsically bounded, it is not a case (Merriam, 1998). In case studies, there is a limit to the number of people to be interviewed and a fixed amount of time for observations (Merriam, 1998). Yin (1994) also maintained that if research questions "do not lead to the favoring of one unit of analysis over another," it is hard to conduct a case study. In my study, a two-month computer course which consists of a definite number of learners and instructors is the case.

Sample Selection

Merriam (1998) maintained that generalization in the sense of statistics is not a purpose of qualitative research, so probabilistic sampling is not needed in qualitative research; in a qualitative case study, the most appropriate sampling method is purposeful sampling (Merriam, 1998). The basic assumption of purposeful sampling is that because researchers want to discover or understand a phenomenon they choose "a sample from which the most can be learned" (Merriam, 1998, p. 61). The first step of purposeful sampling is to determine criteria of selection of the people or sites to be studied (Merriam, 1998). The criteria of selection are closely related to the purpose of the study and researchers need to have important reasons for choosing selecting criteria (Merriam, 1998). After developing criteria for selecting cases, we need to decide how many cases to study. Merriam (1998) maintained that the number of cases under study depends on the research questions, data gathering, analysis progress, and supporting resources.

Merriam (1998) maintained that usually qualitative case studies have two levels of sampling; first, researchers need to choose "the case" under study. Then, researchers need to select people, activities, or documents to be interviewed, observed, or analyzed. Merriam argued that the most important characteristic of case study is "delimiting the object of study, the case" (p. 27). First, the case of my study is a computer course for older adults. According to the Ministry of Information and Communication South Korea, in 2007 there were 215 institutions that offered computer courses specifically for older adults in South Korea. These institutions consist of ninety-nine social welfare centers, 59 senior centers, 20 colleges, 4 post offices and 33 other institutions (research institutions, chartable organizations, or governmental offices). Among these institutions, I selected senior centers because I believed that a computer course offered by senior centers is more older adults-oriented; therefore I could obtain information-rich cases. Among the 59 senior centers which offer computer

courses for older adults, for research convenience I chose one of these senior centers in Seoul because of proximity of my house and contact of staff.

In the senior center, there were five courses: an introductory course teaching how to use word-processing software, an introductory course teaching how to use Excel and PowerPoint, an intermediate course teaching how to use basic Internet skills, an advanced course teaching how to use expanded Internet skills, and an advanced course teaching how to take and edit digital pictures. The term of one course in this center was two months. The computer class instructor teaching all five courses strongly recommended her students take computer classes in the following order: an introductory course teaching word-processing skills, an intermediate course teaching basic Internet skills, and an advanced course teaching expanded Internet skills. An introductory course teaching Excel and PowerPoint skills and an advanced course teaching taking and editing digital picture skills were optional.

Among these courses, I selected an advanced course teaching expanded Internet skills because I assumed that students in this course were the most appropriate group to investigate identity development by computer learning experiences. The instructor said that because most students in introductory courses teaching word-processing skills and an intermediate course teaching basic Internet skills had been using computers for four months, their computer using experiences might be too short to investigate how their identities changed due to using computers. I also assumed that students in an advanced course on taking and editing digital picture skills had already become sophisticated computer users and they might not easily remember how becoming computer literate had influenced their identities. Therefore, I decided to observe an advanced course on expanded Internet skills and interviewed students in this course.

There were fifteen students in the selected course. I tried to interview all of the students in the course, but I succeeded in interviewing ten students. Two students did not

come to class frequently and three students were reluctant to participate in interviewing. I

observed eleven sessions. One course has two sessions in each week for a total sixteen

sessions. The advanced class that I observed was offered from July to August, 2008. I was

able to observe the sessions from the first week of July to the third week of August.

<div align="center">Data Collection</div>

Merriam (1998) maintained that there are three kinds of data collection methods that

qualitative researchers rely heavily on: observation, interviews, and documents. Each data

collection method has its strengths and weaknesses, and researchers choose collection

methods according to their research questions and practical barriers. Primary data collection

sources were field notes from observation and interviews with ten participants. The teacher's

notes on the board were the resource of documentary evidence.

Observation

Observation refers to the process of gathering data by observing people and the

research site. Researchers go to the natural settings that they are interested in and observe

what really happens there. According to Patton (2002), the most important purpose of

observation is to describe the setting, as observational reports of good quality allow readers to

enter into and understand the setting described. Merriam (1988) argued that "participant

observation maximizes the advantages of the human being as instrument" (p. 103) and that

the human instrument is good for understanding complex interactions among humans. She

maintained that like any other measurement tools, "the human instrument can be refined

through training" (p. 103) and suggested that the important question is not how much we can

reduce the observer's intrusion into a setting, but how we can monitor the observer's effects

on the site. Patton argued that what researchers observe is based on their interests, biases, and

backgrounds; therefore, in order to conduct scientific inquiry, researchers need to receive

"disciplined training and rigorous preparation" (p. 260). According to Patton (2002),

researchers need to learn how to pay attention, to practice writing descriptively, to know how to distinguish detail from trivia, and to report the weaknesses and strengths of their own perspective.

Creswell (2005) and Esterberg (2002) identified the following procedures of observation. The first task is to select a research site to be observed that can assist researchers to understand the research questions. Esterberg (2002) argued that a small-scale site is generally good for participant observation and suggests considering the boundaries of the site. I though that a computer training course composed of fifteen students was appropriate to observe. Second, researchers should slowly immerse themselves in the site. Esterberg (2002) argued that because researchers' early impressions of participants is influential, researchers should consider how they can start relationships with participants. Creswell (2005) and Esterberg (2002) commonly argued that much observation in the early days can be overwhelming because it is very hard to judge what researchers should observe, although they have a general topic and research questions. In the early days of the observation, building rapport with the people at the site is the main task (Esterberg, 2002), and a close relationship with participants is helpful for incorporating much information (Creswell, 2005). Esterberg (2002) suggested that being polite, acting interested, listening to others, and being unobtrusive are ways to develop a relationship with research participants. Before I started data collection, I volunteered as an assistant teacher in an intermediate course for one month and eleven students in the advanced course where I conducted the study came from this intermediate course. Therefore, I built some rapport with most of the participants before conducing data collection. In addition, my one-month teaching experience before collecting data allowed me to immerse myself in the research site. I also tried to be polite and show my interest in older adults to build close rapport with the participants.

A third task is to determine one's role as an observer and conducting the observation. Creswell (2005) maintained that during the first few observations, researchers need to decide which role (participant observer or non-participant observer) is advantageous or disadvantageous in terms of research questions. Creswell (2005) suggested that observing broadly first and then focusing the observations more narrowly is a useful strategy for gathering information. Merriam (1998) argued that what should be observed is mainly determined by the purpose of study; the theoretical framework, research questions, and research interests determine what researchers observe. Merriam (1998) also maintained that there are practical considerations that influence what to observe, such as time, money, and energy that researchers can allocate. Merriam (1998) suggested observing the following things: the setting, the participants, activities and interactions, frequency and duration, and subtle factors such as nonverbal communication, symbolic meanings of words, and what does not happen. According to the purpose of my study, I observed social interactions and situational factors affecting older adults' learning processes.

The fourth task of conducting observations is writing field notes. According to Creswell (2005), field notes are records written by the researcher during an observation. Esterberg (2002) maintained that writing field notes is one of the most important tasks and that writing notes assists researchers in remembering what they observe and in organizing their thoughts. Esterberg (2002) recommended that while in the field, the researcher try to write down key words and short phrases that may help him or her to remember things. He also suggested that after leaving the field, researchers should immediately write up full field notes. Creswell (2005) stated that researchers can write two kinds of field notes: descriptive field notes and reflective field notes. Descriptive field notes record a description of physical environments, events, and what participants say and do. Reflective field notes record researchers' personal thoughts and feelings. Esterberg (2002) suggested that recording the

researcher's initial impressions is important because their impressions change once they become used to a site.

Following is a description of the process I used in conducting observation of the computer class sessions. As I observed a session I took notes on what I saw. Because I could not write everything that happened in classroom, I focused on social interactions between learners and between learners and instructors regarding acquiring or using computer skills such as asking questions, leaning over someone's shoulder to view their computer screen, or teaching each other. I also recorded how using computers and writing notes influenced the participants' learning and how where the participants sat determined their learning. With regard to Korean culture, on the field notes I highlighted how the participants interacted with the teacher and volunteer teachers, how younger and older participants interacted with each other, how the teacher treated the participants, and how the participants attempted to save face. In my field notes, I also wrote my impression and my tentative explanation of what I observed and heard. In addition to these field notes, based on one-month experience as a volunteer teacher before data collection started, I created a table which helped me to record the frequencies of certain behaviors by each participant. In each session, I used this table to recorded how many times each participant chatted with whom, asked questions to which peers, looked over the shoulders of which students, voluntarily helped whom, asked questions to teachers, and had difficulties following the teacher's instruction. After each session, I typed up detailed field notes adding some of my own thoughts and comments.

Interviews

I conducted interviews with ten students and the teacher. Researchers cannot observe participants' thoughts, feelings, and intentions; it is also impossible to observe what happened at some previous point in time (Patton, 2002; Merriam, 1998). Therefore, in order to obtain a certain kind of information that cannot be observed, researchers conduct interviews. The

purpose of interviewing is "to allow us [researchers] to enter into the other person's perspective" (Patton, 2002, p. 341). Patton (2002) argued that the ability of the interviewer determines the quality of the information and that an interest in and respect for the participant's perspective are the most important factors in increasing the quality of the data obtained through interviews. Esterberg (2002) maintained that because interviews are a kind of personal relationship, researchers' interpersonal skills are also important. Merriam (1998) pointed out that a good interviewer needs to be "nonjudgmental, sensitive, and respectful of the respondent" (p. 87).

I conducted semi-structured interviews. Semi-structured interviews are more flexible than structured interviews and allow respondents to state their opinions and ideas in their words more openly (Esterberg, 2002). Although researchers have certain topics and questions that they want to explore, they do not pre-establish the exact wording and order of questions (Merriam, 1998). Esterberg (2002) maintained that good interviewers listen carefully to interviewees' responses and follow their lead. Through semi-structured interviews, researchers can explore issues that are important to respondents but that have not been addressed by previous research. Generally, semi-structured interviews allow researchers to gather opinions on a certain topic in detail and in a limited time (Patton, 2002).

There are four steps to conducting interviews. The first step is choosing whom to interview (Esterberg, 2002; Merriam, 1998). Choosing interviewees is very important because the perspectives and opinions of interviewees contribute to a researcher's understanding of a phenomenon and the results of the study (Merriam, 1998). There are two ways to decide on interviewees (Esterberg, 2002). After observing the research site and informal conversation, researchers can choose who needs to be interviewed. The other method involves interviewing an initial or important person and then asking that person to identify other individuals who may be appropriate to interview. Because there were only

fifteen students in the classroom, I did not choose the students that I interviewed, but I attempted to interview all students in the course. Among all the fifteen students in the course, eleven students had been in the previous intermediate Internet course where I volunteered as an assistant teacher for a month before I started data collection. I was able to interview ten of the original fifteen students. Two students did not come to classes for a long period and three students refused to be interviewed. I interviewed the eight students who had been in the previous course where I was a volunteer teacher and the two students who had taken another intermediate Internet course where I did not volunteered as an assistant teacher.

The second step is preparing questions to ask (Esterberg, 2002; Merriam, 1998). Merriam maintained that the value of an interview is based on the researcher's deep knowledge about a topic, which allows him or her to ask meaningful questions, and the ability to ask questions using a language and manner that is easily understood by the interviewee. Esterberg (2002) suggested brainstorming a list of questions and putting them under some different categories and in some kind of order. Based upon my reading about the research topic, I made list of interview questions before I conducted interviewees. The manner of asking questions is very important for eliciting the kind of information desired (Merriam, 1998). It is important for an interviewer to use language that is familiar to interviewees and use specific terms used by the interviewees (Esterberg, 2000). There are some recommendations for phrasing questions appropriately. First, researchers should avoid asking dichotomous questions (Patton, 2002). Dichotomous questions make respondents answer yes or no and discourage them from talking. Second, researchers should use singular questions (Merriam, 1998; Patton, 2002). Asking two or more ideas in one question can confuse interviewees and make it difficult for them to answer the question. In addition, asking a series of single questions at once also may confuse interviewees. Last, researchers should avoid leading questions (Esterberg, 2002; Merriam, 1998). Leading questions cause

respondents to want to answer in a particular way and sometimes discourage interviewees from expressing their own thoughts or opinions. I prepared interview questions by using familiar terms to the participants that they used and I attempted to avoid asking dichotomous, confusing, and leading questions.

The third step of interviewing is actually conducting the interview. Esterberg (2002) mentions that because interviewees often feel uneasy about the interview, it is a good idea to chat with him or her for a few minutes. During the interview, researchers should listen carefully to the interviewee's responses to send out the message that what the interviewee is saying is important (Esterberg, 2002). Probes are follow-up questions or added comments based on what interviewees have said. Probes are one advantage of qualitative research, especially for sensitive interviewers, and probing is one way of getting at detail, examples, and clarification (Merriam, 1998). Patton (2002) suggested audio-taping the interview. Tape-recording allows researchers to obtain all of the spoken information and to listen to an interview as many times as desired; therefore, tape-recording is very useful for analyzing data (Esterberg, 2002). Listening to the interview several times also lets researchers pay attention to some points that may be ignored initially. Patton (2002) noted that "the use of the tape recorder does not eliminate the need for taking notes, but does allow you to concentrate on taking strategic and focused notes" (p. 383). During the interview, researchers can write their reactions to what interviewees said and signals of interviewees that may be important for analyzing (Merriam, 1998). Taking notes about the words used by interviewees also helps researchers to find important quotes from transcriptions (Patton, 2002). Before beginning each interview, I spent a few minutes chatting with interviewees; and during the interview, I attempted to listen carefully to the interviewees' answers. I recorded all the interviews with a digital audio recorder.

The last step to interviewing is transcribing and assessing the obtained data. Patton (2002) suggested doing these tasks soon after the interview to increase the quality of the data. After the interview, researchers need to listen to the recorded tape immediately. If the tape recorder malfunctions, researchers need to make notes of everything that they can remember (Patton, 2002). Patton (2002) also suggested that even when the tape recorder functions well, researchers need to look back on notes to make sure that everything makes sense. He recommended that if some points are ambiguous, the researcher should contact the interviewee again for clarification. He also noted that if a researcher does not succeed in obtaining the needed information, he or she needs to think about where the problems exist. Esterberg (2002) argued that if a researcher tape-records an interview, he or she should transcribe it immediately. She also suggested transcribing in as much detail as possible to preserve "the flavor of what was said" (p. 108). Merriam (1998) maintained that data obtained from one person's interview can be distorted or exaggerated; therefore, researchers need to compare the data with other interviewees' responses and the data from observations or documents. Right after each interview, I attempted to listen and transcribe it immediately. If I found that I failed to acquire some necessary information from the interview, I thought about what caused the problem and tried to change it. A list of interview questions can be found in Appendix A.

<div align="center">Data Analysis</div>

Data analysis is the process of making meaning out of the data and it is a complex process involving "moving back and forth between concrete bits of data and abstract concepts, between inductive and deductive reasoning, between description and interpretation" (Merriam, 1998, p. 178). The quality of qualitative research analysis can be trustworthy when researchers try to reveal the situated nature of participants' meaning making (Ezzy, 2002). In qualitative research, "findings emerge like an artistic mural created from collage-like

pieces that make sense in new ways when seen and understood as part of a greater whole"

(Patton, 2002, p. 432).

I used the constant comparative analysis method. The basic strategy of this method

was to constantly compare (Merriam, 1998). This method is an inductive procedure to

develop and connect categories by comparing incidents in the data to different incidents,

incidents to categories, and categories to different categories (Creswell, 2005). Through

comparison, events that seemed unrelated at first may be categorized together under the same

category and events that seemed related may be grouped differently (Ezzy, 2002). Many

qualitative researchers use the constant comparative method because this method is

"compatible with the inductive, concept-building orientation of all qualitative research"

(Merriam, 1998, p. 159).

Harry, Sturges, and Klingner (2005) explained the procedures of constant comparison

which was developed by Glaser and Strauss (1967) and Strauss and Corbin (1998). In the first

step, researchers name incidents and actions in the data and constantly compare them with

one another. The next step is to group separate codes to categories by reflecting

commonalities among codes to develop theoretical properties of categories. In the third step,

researchers try to figure out the relationships among various code clusters. I simultaneously

analyzed data with data collection. Because qualitative researchers do not know what they

will discover and what the final analysis is, without ongoing analysis they may find

themselves with vast amounts of unfocused and redundant data (Merriam, 1998).

I proceeded with data analysis as follows. I read interview transcripts and field notes

while writing down notes in margins. When I made the notes, I wrote broad terms which

were related to the research questions such as interacting with peers, teaching others, and

using email. I compared the notes of one set of data with another set of data looking for

patterns. Through these comparisons, such tentative categories as social interactions, learning

tools, and competence were developed. Once I had a tentative list of categories, I moved the data fragments in each category and saved them in computer files. Gathering of data in each category helped me to interpret data in a new way. With these categories, I reexamined the data using the constant comparative method and looked for discrepant and new cases. When I found discrepant and new data, I either placed the data into a new category or deleted them. During this process, I constructed final categories about situational factors embedded in older adults' computer learning. However, identifying categories related to older adults' identity took more steps. As I began to write chapter four, I found that the two categories, competence and confidence, were hard to distinguish from each other. Therefore, I searched the literature of self-related concepts and I decided that I needed to create new categories of self-efficacy and self-esteem. Through constant comparisons, I reexamined the data related to these two categories and decided to use these two categories.

Validity and Reliability

Readers evaluate research findings by using validity and reliability (Auerbach & Silverstein, 2003). Internal validity explores the question of how research findings are congruent with reality that researchers try to understand (Merriam, 1998). One of the assumptions about reality in qualitative research is that "reality is holistic, multidimensional, and everchanging" (Merriam, 1998, p. 202). Therefore, qualitative researchers try to explore how participants understand the phenomenon rather than discovering and measuring a single, fixed, and objective reality (Merriam, 1998). Thus, in qualitative research, seeking internal validity means adequately and honestly describing participants' interpretations of the world. Among a variety of strategies to improve internal validity in qualitative research, I used the following strategies suggested by Merriam (1998). The first strategy was triangulation, using multiple data collection methods. Patton (2002) points out that studies using only one method are more likely to have errors than studies using multiple methods regarding understanding

participants' interpretations of phenomenon. In order to collect data, I used two kinds of data collection methods. I observed computer learning lessons, and interviewed older adult learners and their instructor. The second strategy was peer examination and I asked my major professor to comment on the plausibility of my findings. The last one was articulating researchers' biases. I described my assumptions and prejudices about the topic, so that readers can understand how my biases affect the process of interpreting participants' views of the phenomenon.

Second, reliability means researchers can produce the same results when they repeat a research study (Auerbach & Silverstein, 2003). However, replication in the social sciences which explores human behaviors is unlikely to produce the same results. Participants' performance or perceptions toward the same phenomenon can vary over time and space. In addition, "in the social sciences, simply because a number of people have experienced the same phenomenon does not make the observations more reliable" (Merriam, 1998, p. 206). Because qualitative researchers try to understand participants' multidimensional and contextual interpretations of the phenomenon, "achieving reliability in the traditional sense is not only fanciful but impossible" (Merriam, 1998, p. 206). Rather than using the term reliability, Merriam suggested using "dependability" or "consistency" in qualitative research. Qualitative research needs to explore the question of "whether the results are consistent with the data collected" (Merriam, 1998, p. 206) rather than the question of whether the research findings can be replicated. In my study, I adapted the strategies of enhancing reliability suggested by Merriam (1998). First, I articulated my position as a researcher. In order to make sure research findings are congruent with the data that I collected, I explained my assumptions about participants' behaviors and perceptions, the context where I interacted with the participants, and the process of analyzing data. Second, I described in detail how I collected data, how I created themes and categories, and how I made decisions throughout the

process so that readers can understand how I arrived at my findings.

Third, external validity, generalizability, concerns the extent to which people can apply research findings to other situations (Merriam, 1998). Generalizability is a key element of evaluating quantitative research because it shows that the research findings are universally applicable (Auerbach & Silverstein, 2003). In order to show generalizability, researchers need to establish that the samples in the research are representative for an entire population (Auerbach & Silverstein, 2003). However, in qualitative research, researchers choose a single or small purposeful sample because they are interested in understanding the particular deeply rather than exploring what is true of the many (Merriam, 1998). Therefore, qualitative research views generalizability from a different perspective. In qualitative research, people can understand research findings in terms of *working hypotheses* which "reflect situation-specific conditions in a particular context" (Merriam & Simpson, 2000, p. 103). Among many ways of thinking about external validity in qualitative research, the concept of *reader or user generalizability* is the most commonly used (Merriam & Simpson, 2000). This concept assumes that the generalizability is determined by the people who are in various situations, not by researchers' speculation of how research findings can be applied into different settings (Merriam & Simpson, 2000). In addition, Auerbach and Silverstein (2003) proposed the term "transferability" instead of "generalizability." They asserted that theories developed by qualitative research can be transferable; people can suppose more abstract patterns over different situations. In order to enhance the external validity in my study, I provided detailed descriptions of the research site and participants so that "readers will be able to determine how closely their situations match the research situation, and hence, whether findings can be transferred" (Merriam, 1998, p. 211).

Translation Issues

Translation issues need to be addressed here because it affected my data collection

72

and analysis processes. I interviewed participants and wrote field notes in Korean and analyzed the data in English. With regard to the interviews, I used Korean to transcribe all interviews and to analyze each interview. I translated English data which were relevant to the findings of my study. In order to check my translation, I used a back translation strategy by asking a bilingual Korean graduate student to translate some of the English data back into Korean. Then, I compared her translations with the original interview transcription written in Korean. For the field notes, I also analyzed them in Korean and I translated important data into English. I asked again the same bilingual Korean graduate student to translate some of the English data from my field notes back into Korean. Then I compared her translations with the original data that were written in Korean. I tried to make the translations as precise and as representative of the original Korean data as possible.

Assumptions

Because my assumptions regarding this study can affect research findings, I want to describe my assumptions. I assumed that older adults' computer learning in a face-to-face classroom is a social practice and it is situated in a learning context. My own learning experiences in classrooms in South Korea gave me many chances to understand how learning processes are affected by social interactions. In particular, the participants in my study were more heavily influenced by Confucianism than younger people, because Confucianism was the ruling ideology of the Chosun Dynasty (1392-1910). I assumed that social interactions among the participants in my study would be affected by Confucianism thinking that emphasizes unequal relationships between teachers and students and between older and younger adults. I also assumed that situational factors in the classroom, such as learning tools and the physical classroom setting, would affect participants' computer learning. For example, participants' presbyopia and sensitivity to glare make them feel more tired when they watch a small computer screen for a long time. I also assumed that older adults' computer learning

experiences would influence their sense of self. Older adults' diverse activities in a computer learning classroom and their vital involvements in a virtual community also may give them a new perspective of understanding who they are.

In addition, I supposed that my subjectivity would affect the quality of my research in the following way. My grandparents and maternal grandparents are still alive and I also have a lot of experiences of spending time with other older adults. Some older adults enjoy talking with young people and telling them about their lives. I assumed that the participants feel more comfortable when I interview them because most older adults have grandsons whose ages are similar to mine. As a Korean, I am familiar with how older Korean people think and act and this facility would improve my understanding about older adults' computer learning. However, my young age can be a significant barrier to understanding how older adults learn computer skills and how their identities are changed. I don't have any experiences of age-related physical and cognitive limitations. I began to use computers when I was in first grade.

Chapter Summary

This chapter presented the methodological process and strategies that I used to investigate older adults' computer learning experiences in a face-to-face classroom and older adults' identity development due to participation in computer training courses. The research design, sample selection, data collection, and data analysis method were described. A qualitative research design was used and data were collected through observation, semi-structured interviews, and documents. A computer course and interviewees were purposefully sampled based on a series of criteria. Data analysis was conducted using the constant comparative analysis method. Because I used both Korean and English in data collection and analysis, I applied back translation strategy to make sure the accuracy of translation. Methods of improving internal and external validity and reliability and my underlying assumptions and subjectivity were also described.

74

CHAPTER FOUR

FINDINGS

The purpose of this study was to understand how Korean older adults' computer learning in a face-to-face classroom is situated in social contexts and how this learning influences older adults' identities. The research questions that guided this study were: 1) How is computer learning of older adults embedded in the learning context in terms of social interaction, learning tools, physical environment, and culture in the classroom? 2) How do computer learning experiences influence older adults' sense of identities?

Using a purposeful sampling method, an advanced Internet course in a senior center at South Korea was selected for this qualitative case study. I observed eleven sessions of an advanced Internet course for five weeks and conducted eleven interviews (ten students and one teacher). The interviews were conducted and observation notes were written in Korean. I analyzed these data in Korean and I translated only what I wanted to quote in English. I used the constant comparative analysis method to analyze data. I assured all interviewees and staff in the senior center that all data would be kept confidential, so pseudonyms have been used for the names of interviewees and the senior center.

This chapter has two sections. The first section presents a case description of the classroom setting along with interviewee profiles. In the second section, I present the findings derived from the data analysis.

Case Description

Because the context is an important situational factor which influences participants' computer learning, this section describes the senior center in which the computer classroom is located and the classroom setting in which I observed the computer learning course. The senior center is in a stand-alone building in a residential area. The senior center was built in 1998 and is managed by a non-profit organization and funded by the Korean government. A

dining room and a hair salon are located in the basement. On the first floor, there is a lobby, a room where some staff members offer daycare services to older adults with mild dementia, and an office in which older adults can receive consultation about their jobs. A day care center for physically weak older adults and a fitness center are located on the second floor. On the third floor, there are three classrooms and a small lounge where older adults can use computers and play Korean chess. The computer classroom is located on this floor. The fourth floor is used for offices for staff. On the fifth floor there is a big auditorium where older adults enjoy such physical activities as Korean traditional dance and aerobics.

The computer classroom where this study was conducted consists of fifteen small desks in three columns with a computer on each desk. The five desks in each column are close together as can be seen in Figure 1. In addition, the space between each column is small, so that it is not easy to move around the classroom for teachers or students. Unlike regular classrooms, students do not sit facing the front side of the classroom in which the white board is located. Instead, the students in the first column face the left wall. The students in the second column sit with their backs against the backs of students in the first column. The students in the second column also face the backs of students in the third column. For students in the second column, it is hard to see students in the third column because there is a low wall which is the same height of the computer monitors between the second column and the third column. The students in the third column sit facing the right wall. The teacher's desk is located in the right front of the classroom facing the front wall. There are a computer, some books, and documents on her desk. Because her desk is located between the second and the third column, it is hard to approach students in the third column. I stood between students in seats number five and ten in order to observe learning activities in classroom.
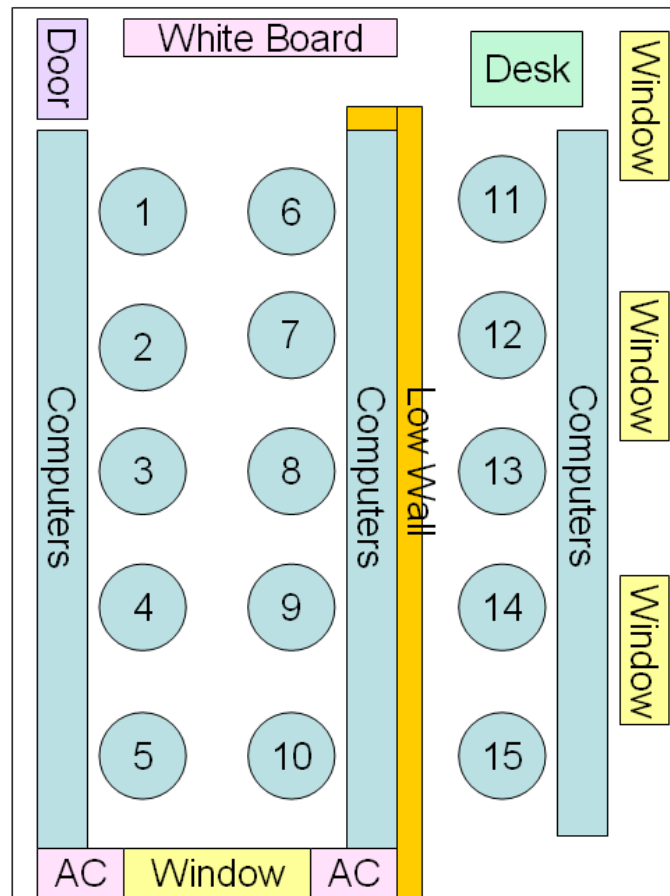
Figure 1. Classroom Setting

The advanced Internet course was supposed to be two-months long (July and August) with two class sessions per week (Monday and Wednesday). Each class session was supposed to be one and half hours, from 2:30 PM to 4:00 PM. However, because the last week of July was summer vacation season for the senior center, the teacher added thirty minutes into six sessions in order to compensate for two sessions that students did not take during the vacation season. Therefore, six sessions (in the second, third, and fourth week) were two hours long, from 2:30 PM to 4:30 PM. There were fifteen students, eight female students and seven male students. Among the fifteen students, eleven students had been in the previous intermediate Internet course where I volunteered as an assistant teacher. In each session, the teacher explained small steps of computer skills first and then she asked students to follow her instruction. After this, the teacher gave students time to take notes and practice computer skills at students' own paces. The teacher usually teaches two or three computer skills in a session. Although students did not have break time in the one-and-half hour long sessions, the

teacher let students have a ten minutes break time in the two-hour long sessions. Among eleven sessions that I observed, there were four sessions when volunteer teachers (college students majoring in computer science) were in the classroom. Different volunteers came to each session.

<p style="text-align:center">Interviewee Profiles</p>

Among all the fifteen students in the course where I conducted this study, I was able to interview ten students. Three students refused to be interviewed and two students did not come to classes for a long period. Among the fifteen students, eleven students had been in the previous intermediate Internet course where I volunteered as an assistant teacher. Among the ten students whom I interviewed, eight students had been in the previous course where I was a volunteer teacher and two students had taken another intermediate Internet course. At the last session that I observed, each student in the class received an incentive that is equivalent to ten U.S. dollar.

This section presents the profiles of ten student interviewees. All interviews were conducted in person. I interviewed each interviewee once and the average interview time was forty minutes. I conducted interviews between the third week and the sixth week of the class. Because it was most convenient for the students to be interviewed at the senior center, all interviews were held on class days. All interviews were conducted in the lobby or lounge of the senior center. There were six male and four female interviewees. The participants ranged in age from 59 to 78 years. Most had used computers for a few months, but JooWon, YongMok, and YoonSo had ten or twenty year computer use experiences. Table 1 summarizes the participants' demographic information.

<p style="text-align:center">Table 1. Interviewee Profiles</p>

Name	Age	Gender	The term of using computers	Seat Number
MeeJong	65	Female	5 months	1

SoHee	69	Female	7 months	2
JooWon	59	Male	About 30 years	4
HyunJin	78	Female	7 months	6
SokWoo	75	Male	5 months	8
SangHak	59	Male	5 months	9
YongMok	65	Male	About 10 years	10
ShinChol	64	Male	2 years	12
EnHa	71	Female	7 months	14
YoonSo	66	Male	About 10 years	15

The following interviewees' profile describes more in-depth information.

MeeJong

MeeJong, 65, began to use computers when she took her first introductory computer course five months before the current interviews were conducted. Her husband encouraged her to learn word-processing skills for him, and she also thought that learning how to use a computer would be good for her church service. She had a computer and an Internet connection at home. She usually uses computers to practice skills that she learns in class and to read many pastors' sermons. She has a close relationship with NamSoon, who took the same introductory Internet course, and they usually eat something together after class ends.

SoHee

SoHee, who is a 69-year-old woman, had been taking computer courses for seven months. Before taking an introductory course in the senior center, her neighbor taught her how to turn computers on and off and how to use a mouse. However, she did not learn how to use a computer from her neighbor. She registered in computer courses seven months ago because she envied one of her friends who learned computer skills in the same senior center. She has a computer and Internet access at home, and she usually uses computers at home for

e-mail, to read newspapers on the web, or to search health-related information. She has a close relationship with HyunJin who takes the same bus to go back home. SoHee and HyunJin took the same introductory Internet course twice together.

JooWon

JooWon, age 59, has been using computers since 1978. He was a government worker, and he learned how to use computers at work. He is retired and now he is managing a private academy which offers opportunities of experiencing farming to elementary students. He has been taking computer courses in the senior center for three months and the main reason he takes computer courses is to learn how to make and manage a website for his academy. At home, he usually uses computers to keep in touch with his friends and find information. He was preparing to live and farm in the countryside, and he is gathering information about these practices from various websites.

HyunJin

HyunJin is a 78-year-old woman, and was the oldest student in the course. She took her first computer class seven month ago because she happened to learn that this senior center offered computer classes, and her granddaughter gave her a used computer. She complained of constant headaches, which limited her computer use to only fifteen to twenty minutes each day. She usually uses computers to keep in touch with her daughter who is in the U.S., to read newspapers, and to practice computer skills that she learned in class. Interestingly, she took an introductory Internet course twice. When she took the course initially, she did not come to three sessions for no apparent reasons in the middle of the course. Then, she came to the course again and she decided that she would cover what she had missed; therefore she took the same course again. When she took the same introductory course again, she asked SoHee, her closest friend, to take the course again with her, which SoHee did. Therefore, HyunJin and SoHee had been taking the same computer courses for five months.

<u>SokWoo</u>

SokWoo, 75, never used computers before he took computer courses. He had been taking computer courses for five months. At home, he uses computers to e-mail his children and grandchildren who live in the U.S. He has close relationships with SangHak and YongMok, who had been taking the same computer courses for three months. In class, SangHak and YongMok tried to help him often, and they had two social outings outside of class. In class, I observed that many times he did not ask for help even though he could not do some of the skills that he was being thought. His main reason for taking computer courses seemed to be just being in the classroom to feel that he was computer capable rather than to acquire computer skills. In session six, the students learned some complicated computer skills, and it was beyond his ability to learn these skills. However, he did not ask for others' help, and he failed to acquire these advanced computer skills. After this session, he did not come to class, and I think that he abandoned computer courses because they were beyond his capability.

<u>SangHak</u>

SangHak, 59, never used computers before starting to take computer courses five months ago. While I conducted observations, he did not come to classes for two weeks because of traveling. At home, he uses computers for three hours each day, most of which is devoted to playing a Korean card game. In class he was the most outgoing student; sometimes he shared a joke with the teacher and he talked with many peers during sessions. He had a close relationship with YongMok whom he met in an introductory Internet course three months ago.

<u>YongMok</u>

YongMok, 65, had been using computers since the middle of 1990s. The reason he started to use computers about ten years ago was to play Go (a strategic board game for two

players) using computers. Although he learned some computer skills from computer courses, the only reason he uses a computer at home is to play Go. He had been taking computer courses for five months in the senior center where this study conducted, and he started to take computer courses because his wife encouraged him to do it. He and SangHak had a very close relationship, and they met several times outside of the senior center to socialize.

ShinChol

ShinChol, a 64 year old male, had been using computers for two years. He had been taking computer courses for five months in this senior center. Prior to this course, he had already taken computer courses at three different places. In these three places, he had a difficult time because teachers did not put notes on the white board. He bought a desktop computer six months after he began to take computer classes. At home, he usually uses computers to review computer skills that he learned in class. He still corresponds with four former classmates through emails.

EnHa

EnHa, 71, had learned how to use emails from her grandchildren before taking computer classes. Because she wanted to learn more computer skills in a formal education setting, she enrolled in an introductory computer class seven months ago. She felt sorry for the teacher and her peers because many times she failed to follow the teacher's instruction and the teacher and her peers had to help her a lot. She did not use computers at home because she could not practice computer skills that she learned without others' help.

YoonSo

YoonSo is a 66-year-old man, and he had been using computers for about ten years. He began to use computers to run a small business. He learned computer skills by reading books or from his children. Because he wanted to learn computer skills formally, he registered in an introductory computer course five months ago. He also took a dance class

and an oriental medicine class in the senior center where this study was conducted. He uses

computers to record what he learned such as new computer terms or current news. He also

uses computers to make documents for his social club.

<div align="center">Findings</div>

In this section, I will present the findings derived from the data analysis. Based on

the research questions, I will present findings of the study in five sections: social interactions,

learning tools, physical settings, Korean culture, and identity development. As can be seen in

Table 2, I identified two categories from data analysis regarding how students' computer

learning is embedded in their social interactions with peer students and teachers.

<div align="center">Table 2. Categories</div>

A. Social Interactions
1. Getting help
2. Observing others
B. Learning Tools
1. Computers
2. Notes
C. The Physical Setting
1. Defining social interactions
D. Korean Culture
1. Age-hierarchy
2. Saving face
3. Teachers as authority figures
E. Identity Development
1. Increased self-efficacy
2. Raised self-esteem
3. Feeling less marginalized

Observations and interviews suggested that students received information through

getting help and observing others. Analysis revealed two categories related to learning tools

that students used. This study found that students build their own knowledge through

interaction with computers and notes. I identified one category with regard to how students' computer learning is embedded in the physical setting. Observations and interviews revealed that the classroom setting determines students' social interactions. Analysis found three categories related to Korean culture in the class. The study revealed that age-hierarchy, saving face, and teachers as authority figures influence students' social interactions and processes of receiving information. Finally, I identified three categories regarding how computer learning experiences influence students' identities. Interviewees mentioned that their computer learning experience enabled them to increase self-efficacy, raise self-esteem, and feel less marginalized from society and family.

Social Interactions

Social interaction is an important component of the social context where learning takes place. Observations and interviews suggested that learning is promoted through social interactions in two ways--through getting help and observing others.

<u>*Getting Help.*</u> When students failed to understand something from the teacher's lecture, they clarified what they needed through getting help from three sources: peer teachers, volunteer teachers, and the teacher.

Getting help from peer teachers. In most cases, when students had difficulties in understanding the teacher's lecture, they asked questions or asked for help from peer students who sat nearby. During the interviews, students who often received help from peer students commonly mentioned that receiving information from peer students was helpful to practice computer skills. SoHee stated; "When I don't understand (computer skills), I asked questions to a peer who sits by me, because she teaches me. I appreciate it." EnHa also stated;

> When I don't know and when I am confused with what I need to do, getting help from
> peers who are near me is very helpful…If the person who sits by me knows computers
> well but does not teach me well, it does not mean anything.

During their interviews, SokWoo and ShinChol stated how much peer teaching had been helpful to them in previous computer courses which they took. SokWoo stated, "Because I was old, I shook my hands when I touched keyboards; so a guy who sat by me taught how to use keyboards and how to single or double click mouse. When he taught me, I was very pleased." ShinChol also appreciated a peer student's teaching when he had taken an introductory course in another organization. He mentioned, "I appreciated it. I felt that I succeeded in crossing the street although I walked with a cane."

Students were divided into two groups: students who needed other's assistance to practice computer skills and students who taught peer students. Usually students asked questions of peer students sitting beside them. Observations revealed that SoHee (seat number 2) asked questions to MeeJong (seat number 1) and NamSoon (seat number 3); NamSoon (seat number 3) asked questions to JooWon (seat number 4); SokWoo (seat number 8) asked questions to SangHak (seat number 9) and YongMok (seat number 10); SangHak (seat number 9) asked questions to YongMok (seat number 10); and EnHa (seat number14) asked questions to YoonSo (seat number 15). As might be expected, students who had higher level computer skills voluntarily taught peer students who had lower computer skills. For example, when SoHee (seat number 2) had difficulties in practicing a compute skill, she usually asked questions to MeeJong (seat number 1). However, MeeJong also helped SoHee voluntarily although SoHee had not asked her questions.

In most cases, students taught their peers voluntarily usually in practice time, not during the lecture. During the lecture, all students, including students who had high computer skills, were busy listening to the teacher's lecture and following the teacher's instruction. Also, the teacher did not seem to want students to teach their peers during her lecture. On one occasion when SangHak (seat number 9) was absent, YongMok (seat number 10) helped SokWoo (seat number 8) to follow the teacher's instruction during the lecture; however, the

teacher stopped YongMok and encouraged him to listen to her lecture instead of helping SokWoo. The teacher told him that she would help SokWoo later. During the practice period, students who had higher computer skills had enough time to help peer students voluntarily because they could practice computer skills at their own pace. For example, EnHa (seat number 14) had difficulties practicing computer skills without other's help. During the lecture, YoonSo (seat number 15) focused on listening and practicing his own computer skills. However, during the practice period, YoonSo frequently took care of EnHa after finishing his practicing. Although the teacher did not want students to teach peers during the lecture, during the practice period, she encouraged students to help each other. In the classroom, three times she said "if someone finishes practicing computer skills, please take care of peers who need help." The teacher also told students that helping peer students was beneficial to the students who gave help because teaching others gave them more understanding of computer skills.

The teacher identified the students who had high computer skills and asked them to teach peer students. In particular, when many students did not understand the teacher's lecture or when there were not any volunteer teachers, the teacher asked students who had high level computer skills to teach peer students. For example, in one session, many students had a hard time in registering themselves into the senior center homepage. Because there was no volunteer teacher on that day, the teacher could not help all the students who needed help. Therefore, she asked MeeJong and JooWon who had successfully registered to teach peer students who needed help. After the teacher found YoonSo succeeded in registering himself, she also asked YoonSo to help EnHa sitting by him.

During her interview, the teacher said there were often reasons for asking some students to teach peer students; first, students who had high level computer skills got bored after finishing their practicing; second, she could not take care of all the students who needed

help; third, some students who had high computer skills wanted to show that they had high computer skills; fourth, when students taught peer students, conversations among students increased; fifth, some students were reluctant to ask questions.

Peer teaching was not only beneficial to the students who received information from peer students but was also beneficial to students who taught peer students. Peer teaching was a good way of learning for the students who taught others. During the interviews, the five students who had higher computer skills and who commonly taught others expressed the benefits of peer-teaching. ShinChol stated, "I can input the point that I teach into my memory correctly. So when you are somewhat unskillful, you definitely come to understand something by teaching others… So I admit that teaching is worthwhile." YoonSo also mentioned, "When I teach something, I come to know it better because I can teach only when I know. Teaching something is not just teaching, it is the same as practicing and reviewing." MeeJong said that teaching is another way of learning. She mentioned, "Teaching others is learning. Helping others is helping me."

Although many students received information about computer skills through getting help from peer students, not all students received equal help from peer students. Because peer students had different computer skills and characteristics, some participants received more information from peer students than did other students. For example, SoonMyung (seat number 13) who usually had difficulties in receiving enough information from the teacher's lectures sat by ShinChol (seat number 12) and EnHa (seat number 14). Because EnHa had lower computer skills than SoonMyung, ShinChol was the only student who could teach SoonMyung without moving around. Although ShinChol had high computer skills, he had a reserved character and he usually did not teach peers voluntarily. ShinChol stated, "I cannot speak well and I don't have ability to lead discussions…Because I am poor at speaking, if someone does not talk to me first, I would not say anything." I observed that because

ShinChol did not help SoonMyung voluntarily, when SoonMyung had trouble, she did nothing until the teacher helped her. In contrast, EnHa (seat number 14) also needed to receive more information to understand the teacher's lecture like SoonMyung, but EnHa received much help from YoonSo (seat number 15). Because YoonSo had high computer skills and an outgoing-character, he helped EnHa many times voluntarily. During her interview, she mentioned YoonSo's help:

EnHa: When he teaches me, I appreciate it and I am sorry for him.

I: Why are you sorry for him?

EnHa: I am sorry for him because I did not do well (laugh). But I really appreciate him because he teaches me well. I appreciate it. I appreciate it very much.

In particular, when students came to class late, they received necessary information through peer teaching. For example, NamSoon (seat number 3) came to class late two times; once she asked JooWon to teach her and once JooWon taught her voluntarily. Although she was twenty minutes and fifty minutes late, she succeeded in learning computer skills because she received necessary information from JooWon. Students also received information through peer teaching when students were absent in the previous session. However, these students failed to obtain all the knowledge that they did not learn in the previous session because these two students did not have enough time. For example, before a session began, YoungJoo (seat number 11) who had not come to the previous session asked ShinChol (seat number 12) to teach her what students learned in the previous session and for about five minutes, ShinChol helped her. However, after a new session began, ShinChol could not teach her because they needed to pay attention to the new session.

Although many students received necessary information from others, this kind of social interaction was not always helpful to students. When students obtained inaccurate information from peer students or they received different information from different peer

students, these students became confused. I observed three times that some students gave wrong information to peer students. For example, in a session students learned how to attach pictures to an E-mail. After succeeding in attaching picture files to his E-mail, SokWoo asked YouJin how to finish sending his email. Because YouJin was busy with her practicing, she did not even take a look at SokWoo's screen and told him to click 'Compose' button. If SokWoo had clicked "the Compose" button, he would have needed to repeat all the steps that he did. However, fortunately another person helped SokWoo at that time, so he could succeed in sending email with attached picture.

In addition, peer teaching interfered with the learning process of students who taught others. During lectures, in particular, peer teaching could hinder learning of the students who taught peer students because these students could not pay attention to the lectures. For example, because SokWoo (seat number 8) and SangHak (seat number 9) had been taking the same computer courses for three months and they sat side by side, SokWoo usually asked SangHak questions and SangHak kindly answered SangHak. However, in his interview, SangHak mentioned sometimes his peer teaching hindered his learning.

SangHak: When SokWoo talks, I did not catch the instructor's explanation.

I: Can't you hear what the teacher says?

SangHak: I cannot hear well and because he asks questions at the critical moment, I cannot hear it. So I ask who is sitting behind me.

Getting Help from Volunteer Teachers. I observed that a volunteer teacher was another source from which students received assistance in learning computer skills. Usually volunteer teachers gave assistance to students who needed help before the students asked for help. If volunteer teachers saw a student had a hard time in practicing computer skills alone, they approached the student and taught them what they needed to do next.

Volunteer teachers influenced social interactions in the following two ways. First,

when volunteer teachers were in class, students preferred to receive help from volunteer teachers rather than receive it from the teacher. For example, although SangHak usually did not ask for help, SangHak asked a volunteer teacher to watch how he practiced computer skills and teach him if he made mistakes. For instance, SangHak and YongMok both wondered how to delete a downloaded email. Although the teacher at front of the classroom was free, SangHak and YongMok asked for help from a volunteer teacher instead of the teacher. There may be two reasons for this. First, the teacher usually stayed at the front of the classroom making it hard for students who sit in the middle or back of the classroom to ask the teacher questions. However, unlike the teacher, volunteer teachers moved around the classroom or stayed at the middle of the classroom to help students. Second, students perceived the teacher as an authority figure, and this perception may have made them feel uneasy about asking her questions. However, the volunteer teachers who were in their twenties might not have much authority, so they were easier for the students to approach. Second, when volunteer teachers were in the classroom, they decreased social interactions among students. Volunteer teachers were observed stopping social interactions between two students twice. During a practice period, YoonSo (seat number 15) began to teach MeeJong (seat number 14), but a volunteer teacher approached them and began to teach MeeJong; therefore, social interactions between YoonSo and MeeJong stopped.

Getting Help from the Teacher.   In addition to lectures, during practice periods students received help from the teacher. There were two forms of getting help from the teacher. First, the teacher voluntarily helped some students who failed to understand her lecture. Because all of the students in this advanced Internet course had taken an intermediate Internet course from the same teacher, she knew well which students had high or low computer skills. Therefore, the teacher paid more attention to the students who had lower computer skills; then, if she found these students needed more information to practice

computer skills, she voluntarily helped theses students. While she delivered lectures, she asked students to implement small steps of computer skills with their computers. Because of the structure of the classroom, the teacher could watch each student's screen; therefore, she easily recognized which students had difficulties. For example, right after finishing her lecture, she gave students some time to practice computer skills. Because she knew that SokWoo and EnHa had difficulties in practicing computer skills, she asked a volunteer teacher to help SokWoo and she helped EnHa during practice time. Second, during practice periods, if students wanted to have more information, they sometimes asked questions of the teacher. Occasionally, the teacher moved around to check all the students and students would ask questions when she approached them. Also, a few students who sat at the front of each column asked questions to the teacher who usually stayed at the front of the classroom during the practice period.

Observing Others. Another way of receiving information through social interactions is observing peer students. There were two kinds of observing. First, students who needed more information to practice computer skills obtained necessary information through observing what peer students did. Students frequently observed peer students sitting near by to confirm that what they were doing was correct. If some students saw what they did was different from what peer students did, these students asked questions to peer students or teachers.

Second, when a student asked questions to teachers, they gave help to the student. In this case, the student sitting beside this student who asked question to teachers learned while observing what teachers taught peer students. I watched two cases of this kind of learning by observing. First, in one session, the teacher asked students to write their short autobiography in order to upload it. While writing her autobiography, HyunJin (seat number 6) asked the teacher how to change the color of her texts, something the teacher did not teach in her

lecture. The teacher taught HyunJin how to do it and YouJin (seat number 7) who observed how the teacher taught HyunJin also changed the color of her texts. Second, although YongMok and SangHak had learned how to change font types before, they forgot how to do it. One of them asked the teacher to teach them how to do it. Instead of teaching the whole process, the teacher just taught them the first step of changing font types. YongMok who had higher computer skills than SangHak figured out the next steps of doing it and YongMok finally succeeded in changing font types. SangHak observed what YongMok did and SangHak also succeeded in changing font types.

Although in most cases students received necessary information from observing peer students, observing was not always helpful to students. As I mentioned before, particularly during lectures students compared their screen to peer students' screens to confirm that they were doing alright. Sometimes, students could have different screens although they used the same computer skill correctly. If a student found they had a different screen compared to their neighbor's screen, they assumed that they had done something wrong. For example, the teacher asked students to open Windows Movie Maker. If none had used this software before, this software did not show any pictures or video clip at its first screen; however, if someone had used this software before, the screen would show some pictures or video clips that someone used before. Although SoonMyung (seat number 7) opened Windows Movie Maker correctly as the teacher asked her to do, she found that her screen was different from SokWoo's (seat number 8) screen, which showed some pictures that someone used in a different class before. Although SoonMyung had done it correctly, she thought she had made a mistake and asked for help from volunteer teachers.

This section describes how students' computer learning is embedded in students' social interactions with peer students, volunteer teachers, and the teacher. Students received necessary information through peer teaching and getting help from volunteer teachers and the

teacher. Students also received information through observing how peer students practiced computer skills and how teachers taught peer students.

Learning Tools

There were two learning tools influencing students' learning in the classroom: computers and notes. Using these tools enabled students to build their own knowledge with information that they received. In the following sections, I will describe how the participant's learning was embedded in computers and notes.

Computers. Using computers changed other's knowledge of computer skills into the participant's own knowledge of computer skills. In class, students used computers when they practiced computer skills with information that they received through listening to lectures or having social interactions. Although students absorbed information that was given by others, what they received from others could not become their own knowledge until they used computers. While students moved the mouse, touched keyboards, and saw their screens, students came to construct their own knowledge of computer skills out of information which others gave them. The knowledge of others is transmitted to the participant's brain through verbal or visual messages. Students saw how teachers or peer students used computers. Students also heard what teachers or peer students explained. Although students received information from teacher and peer students, they could understand the meaning of computer skill knowledge only when they implemented the knowledge with computers.

Being told about computer skills from others or observing how others use computers is different from actual use of these computer skills. Therefore, using computers enabled some students to recognize that they needed to have more information to use a computer skill which others use. When person A uses a computer skill, he or she has a variety of information needed to implement the skill. However, if person B observes how person A uses a computer skill, person B would be only able to partially observe the information belonging to person A.

In addition, if person A explains to person B how to use a computer skill, person A would tell person B limited information that is needed to perform the skill. When person B actually attempts to use the computer skill with the information from person A, person B may recognize that he or she needs more information.

An example that showed that using computers let students realize that they needed more knowledge was confusing their ID with their Email address. During her lecture, the teacher taught how to create a user ID that they wanted to use on a website. Although students learned how to create user IDs, when they used computers many students realized that they needed to know the differences between user IDs and email addresses. Many students put their email addresses in the box that asked which user IDs they wanted to use; however they could not input all their email address because their email addresses exceeded the limit of the number of characters of a user ID. Another example was regarding downloading files from the Internet. If one wants to download a picture from websites, a folder should be chosen in which to download the picture. However, if one wants to download another picture to the same folder, the picture can be downloaded in the same folder without choosing the folder again. During the lecture, the teacher taught how to develop a folder for the first time, but she did not teach that they did not need to choose the same folder again for a second time. Therefore, while using computers, students realized that they needed to have more knowledge about choosing folders.

Because using computers was closely related to the cognitive work of students, unexpected problems brought on by computers hindered their learning. If something happened which was not explained by teachers or had not been experienced before, students had difficulties in constructing their meaning of computer skills. The common problems that were brought by computers and confused students were different versions of software and malfunctioning. First, when students used different versions of software compared to the

teacher's software, they became confused. One day the students learned how to see pictures using special software. All students had the same version of the picture-showing software that the teacher used during her lecture, but a different version of the picture-showing software was installed in SangHak's computer. Because the different version of software had different buttons and functions, SangHak could not use this software and finally he could not practice this computer skill without the teacher's help. Here is one more example. The teacher taught how to build web-sites using the "Namo Web-editor" software. Unlike other software, this software was not installed in all the students' computers at home. Therefore, the teacher let students take the installation CD to their home and install this program. The problem is that the version of the software that students used in class and the version of the software that the installation CD had were different. Therefore, the students who wanted to practice the computer skills of the "Namo Web-editor" software at home expressed their difficulties during the class. In class, because different versions of the software had different functions and menus, ShinChol mentioned that he needed extra time at home to practice using this software. During the interview, students mentioned how hard it was to use different software. EnHa stated, "At home I use the computer that my children used to use. The computer that I use in the classroom has some software programs but when I practice the computer skills at home it [the software] is different. So I do not want to use the computer at home."

Second, problems with hardware influenced students' learning processes negatively. I observed two examples of this case; a malfunctioning mouse and slow Internet access. A malfunctioning mouse interfered with YongMok's learning. YongMok complained that the scroll down of his mouse did not work. He asked the teacher to change his mouse to a new one, but the teacher answered that the senior center would not change the mouse because other functions of the mouse were fine. One day, he complained about his mouse three times and he finally threw his mouse to the desk. Although not using scroll down feature of his

mouse did not inhibit his learning very much, this malfunctioning mouse bothered his mind and slowed down his practicing pace. Slow Internet connection also caused difficulty in practicing a computer skill. In a session, students learned how to watch a video clip through the Internet. Because of slow Internet access, some students needed to wait more time the others to watch a video clip. Because most students could watch a video clip with no delay, these students who had slow Internet access thought that they had made a mistake; therefore, they began to ask for help or tried to click other buttons. Slow Internet access inhibited the process of building one's knowledge of computer skills.

Notes. Notes were auxiliary learning tools that reminded students of what they needed in order to build their knowledge of computer skills. Because most students used their notes to practice computer skills, notes enabled students to construct their own knowledge out of information that they received from others. Notes were an important learning tool in this study because the teacher did not use any textbooks. During her interview, the teacher explained that because the textbook that the Korean government created and distributed for older adult computer learners was too heavy and contained too much detailed information, she did not use this textbook. Each session consisted of the following phases; first, the teacher delivered her lecture while putting notes on the white board; second, students practiced small steps of a computer skill in accordance with her lecture; third, after practicing all the steps, the teacher asked students to take notes of her writing on the white board; fourth, the teacher gave students about twenty to thirty minutes to practice the computer skill that she taught.

The teacher encouraged students to use their notes when they practiced computer skills. The teacher emphasized the value of notes about ten times. For example, she said "Please take notes carefully. Later you might not remember what you learned today; so please review it with your notes." While she helped students during practice periods, she checked

how students used their notes as well. For example, while she helped SoHee, she said "Why didn't you use your notes? Please use your notes (to practice computer skills)." In particular, taking notes was useful to the students who came to class late to catch up with what they missed. If students were late, they would take notes of what the teacher wrote on the white board. For example, YoungJoo came to the class late twice and each time she took notes of what the teacher wrote on the white board first and then she succeeded in practicing computer skills with her notes without other's help.

Although the teacher highlighted the value of notes and most students used their notes to practice computer skills, some students did not think taking notes was useful to practice computer skills. Although the teacher taught how to insert a picture in NaMo program (Web-Page building software) in the previous session, some students did not understand how to do it. The teacher asked students; "Why can't you do this although you took notes before?" Then, YouJin said, "My notes made me confused at home." During her interview, SoHee told me that her notes were not helpful to practice computer skills at home. In his interview, JooWon also told me that for the students who did not understand computer skills, taking notes about computer skills was not useful.

For some students their notes were not useful because their notes did not contain all information that they needed to practice computer skills. For example, students learned how to find pictures of wild flowers and download them using the Internet. The teacher wrote the following notes on the white board.

Image – Wild Flowers – click small picture – click big picture - + in a box – my folder – click the folder of your name – open

"Image" meant students needed to choose the "Image" button before they inserted search key words in a search engine. "+ in a box" meant students need to move their mouse on the picture and if they wait for 2 seconds, the picture of "+ in a box" popped up; and they

could save image if they clicked this picture of the box. Their notes said they needed to click the folder of their names because students made the folder which had their name in the computer that they used in the senior center; however, at home they probably did not make the folder of their name. As we saw in the above example, if students failed to remember the meaning of their notes that did not contain all necessary knowledge, it would be difficult to practice computer skills with notes that they took in a class.

Although students' notes helped them to practice computer skills, notes sometimes hindered students' learning processes in the following two ways. First, taking notes during the lecture made some students fail to follow the teacher's instruction. When the teacher delivered a lecture in the classroom, she asked the students not to take notes but to pay attention to listen to what she said and follow what she did. After her lecture, she let the students take notes and practice computer skills by themselves with their notes. However, some students attempted to take notes during the lectures, and sometimes their note-taking during the lecture inhibited their learning. When the teacher taught simple computer skills, some students' note-taking during the lecture did not interfere with the learning. However, note-taking during the lecture while learning complicated computer skills sometimes obstructed some students' learning because these students did not pay attention to listening to what the teacher said or watching what she did. For example, in a session the teacher wrote her notes on the white board before she began to deliver her lecture. Some students also took their notes and among them, SokWoo and EnHa, who had low level computer skills did not finish their taking notes, although the teacher had finished her notes and started her lecture; therefore, SokWoo and EnHa failed to follow her instructions and they needed to have others' help to practice this computer skill.

Second, incorrect note-taking interfered with students' learning. If some students wrote wrong information, they could not succeed in practicing with their notes which had

incorrect information. In one session, students learned a very complicated computer skills which had more than fifteen steps and many students had difficulty in practicing these skills. While the teacher helped some students who could not practice the skills by themselves, she found that EnHa and YoungJa's notetaking was incorrect and this was the reason they could not go further to the next step.

This section showed how students' computer learning is embedded in learning tools that they used in the classroom. Observations and interviews suggested that while using computers, students construct their own knowledge with information that they received from others. This study also found that notes helped students to remind them of what they needed to do to build their own knowledge of computer skills.

The Physical Setting

The physical setting of the classroom is one important aspect of the context which influenced learning. Observations and interviews found that because of the unique classroom structure [See Figure 1] where students sat determined their interactions with teachers and peers.

Defining Social Interactions with the Teacher. During the practice period, the teacher usually stayed at the front of the classroom while looking over students' practicing. During the practice period, she also frequently used her computer located in the right front of the classroom. Only once or twice per session, the teacher moved around the classroom. I observed that students sitting at front of each column had more social interactions with the teacher during practice periods in the following two ways. First, when the teacher was at the front of the classroom, she observed students sitting at the front of the classroom such as SoHee (seat number 2), HyunJin (seat number 6), and YouJin (seat number 7). If the teacher found these students had difficulties practicing computer skills, she helped them voluntarily. Therefore, SoHee (seat number 2), HyunJin (seat number 6), and YouJin (seat number 7) who

had low computer skills and sat at the front of the classroom received more help from the teacher. The teacher helped students sitting in the middle and at the end of each column only when she moved around the classroom. Because the teacher stayed at the front of the classroom more often than moving around the classroom, students sitting at the front of the classroom received more help from the teacher. Second, students sitting at the front of the classroom asked more questions to the teacher than students sitting in the middle or at the end of the classroom.

Because most of time the teacher stayed at the front of the second column during the practice period, HyunJin (seat number 6) and YouJin (seat number 7) asked questions to the teacher frequently and the teacher also frequently helped them before they asked for help. HyunJin mentioned how much her seat was beneficial to her learning:

I think that the seat [at the front of the second column] is half of the battle. I feel safe and it is comfortable and I can easily see whiteboard. In addition, because the teacher is near me I can have more guidance from her.

Students sitting at front of the first and third column asked the teacher questions more frequently than students sitting in the middle and at the end of the classroom. Students sitting in the middle and at the end of each column asked the teacher questions only when she moved around the classroom. I observed a case that showed how much students preferred to sit at front of the second column. There was an unspoken rule in the class; the first day of class whatever seat the student selected would last for the rest of course. When I entered the classroom before the first session began, HyunJin sat on the seat number six and MeeJong sat on the seat number seven. Although there was no one in seat number eight, SangHak (seat number 9) already saved this seat for SokWoo. YoungJoo came to class late and she found MeeJong already took the seat that she wanted to take. YoungJoo was very angry at MeeJong and she loudly said because she already had sat on the seat number seven in the previous

course, MeeJong should move to another seat. The teacher calmed down YoungJoo and YoungJoo sat on the first seat in the third column which was empty.

Defining Social Interactions with Volunteer Teachers. Because volunteer teachers moved around the classroom, they had more social interactions with students sitting in the middle or at the end of classroom than the teacher did. During the lecture or practice period, volunteer teachers voluntarily helped students who had difficulties in following the teacher's instruction or practicing computer skills. Students who failed to understand the teacher's lecture also asked for help from volunteer teachers. Although volunteer teachers moved around the classroom and had frequent social interactions with students sitting in the middle or at the end of each column, students' social interactions with volunteer teachers were influenced by classroom setting in the following way.

When volunteer teachers had nothing to do, they usually stayed between the first and second column. There may be two reasons for this; first, there was more space between the first and second column than between the second column and the third column. Second, if volunteer teachers stayed between the second column and the third column, they could not see screens of the second column because students in the second column faced the third column; however, if volunteer teachers stayed between the first and second column, they could watch all students' screens. When volunteer teachers stayed between the first and second column, they helped students sitting in the first and the second column first; then, they helped students sitting in the third column next. I observed that volunteer teachers helped the students in the first and second column first and then they taught the students in the third column later.

Defining Social Interactions with Peers. Where students sat determined the number of social interactions with peer students. I observed that when there were no volunteer teachers, students sitting in the middle and at the end of each column had more social interactions with

peers than students sitting at the front of the classroom. Because students sitting at the front of the classroom could ask the teacher questions or could ask for help from the teacher, they had fewer social interactions with peer students. However, for students sitting in the middle or at the end of classroom, it was easier to ask questions to peer students sitting next to them than to ask questions to the teacher staying at the front of the classroom.

Because of the classroom structure, students' interactions with peer students sitting in different columns occasionally occurred. Students in the first column faced the left wall and they sat with their backs against the backs of students in the second column. It is easier for students in these two columns to have interactions with students sitting next them in the same column than to interact with students sitting at their backsides. Therefore, in most cases students in these two columns interacted with peer students in the same column especially with those who sat next to them. However, a few times students in these two columns interacted with each other during the practice period. Because during the practice period students had enough time to practice their skills, sometimes students looked back and interacted with each other. For example, during a practice period SoHee (seat number 2) taught peer students how to send an E-card that the teacher did not teach them. SoHee asked HyunJin (seat number 6) and YouJin (seat number 7) to see her monitor and she taught them how to send an E-card. SangHak (seat number 9) and YongMok (seat number 10) also interacted with JooWon (seat number 4) sometimes. Because JooWon had the highest computer skill among students, YongMok and SangHak sometimes asked JooWon questions or asked for help from JooWon.

Although students in the first and second column interacted with each other sporadically, students' interactions between the first and third and between the second and the third only rarely occurred. Because computer monitors of students in the second column faced the back of students in the third column, students in the third column could not see

computer monitors of students in the second column. In addition, students in the second column could not see computer monitors of the third column easily because of the low wall between these two columns. There were only two cases of students' interactions between these two columns. In one session students learned how to send pictures through email attachment and the teacher encouraged students to send pictures to the students in the classroom. After SangHak (seat number 9) sent his email to YoonSo (seat number 15), he asked YoonSo to check his email. In another case, while the teacher delivered her lecture, she asked EnHa (seat number 14) to click a button; however, EnHa could not find the button which the teacher mentioned. Because YoonSo (seat number 15) did not help EnHa (seat number 14), SangHak (seat number 9) called to YoonSo and asked him to help EnHa. Students' interactions between the first and third column occurred only one time. Because JooWon (seat number 4) had high computer skills, the teacher asked him to teach YoungJoo (seat number 11). However, there were no voluntarily social interactions among students in the first and third column.

In general, classroom structure made students in the third column have fewer social interactions with peer students than students in the first and second column. Students in the third column could not ask questions or could not ask for help from students in the first and second column because students in the first and second columns needed to move around the wall in order to approach students in the third column. In addition, students in the third column could not observe computer screens of the first and third column because of the classroom structure. YoonSo (seat number 15) complained of it; "When I do not understand something, [if I sat] in the first column, I could see people in the second and the third column. But I can see only mine [my monitor] and the people who sit by me."

In summary, because of the unique classroom structure, where students sat determined students' interactions with the teacher, volunteer teachers, and peers. Students at

the front of the classroom had more interactions with the teacher than students who sat in the middle or at the end of the classroom. Because volunteer teachers usually stayed between the first and second column, students sitting in the first and second column received volunteer teachers' help more quickly than students sitting in the third column. Students sitting at the front of the classroom had fewer interactions with peers because these students could easily ask questions to the teacher. Students also usually interacted with other students who sat in the same column.

Korean Culture

Observations and interviews suggested that students' learning was embedded in Korean culture. Korean culture is heavily influenced by Confucianism and this culture influenced students' social interactions affecting students' learning processes. In this section, I will describe how three elements of Korean culture - age-hierarchy, saving face, and teachers as authority figures - affected students' learning process.

Age-Hierarchy. Confucianism maintains that younger people are less powerful than older people; therefore, younger people must respect older people and older people should protect younger people. Because Korean society is heavily influenced by this Confucian assumption, age-hierarchy existed even among older adults themselves whose age ranged from their early sixties to their late seventies. During interviews, I found that most interviewees knew the ages of their peers. They recognized those who were older than or younger than themselves. I observed a case that showed how much students were interested in knowing the ages of their peers. When I volunteered as an assistant teacher in an introductory computer class, some students asked the teacher about the age of students who were absent on that day. Koreans need to know the ages of their peers because age determines the nature of social interactions. For example, age influences how they address each other in conversation. I observed a student who called a peer student, who was older than herself, "a

senior," and she called a peer student who is younger than herself as "a junior."

The age-hierarchy among the participants influenced their interactions with peers. Because of their age-hierarchy, some students were reluctant to interact with certain students. For example, ShinChol (64 years old), who was the third youngest of the interviewees said that he acted carefully when he interacted with older students; "I think that I as a younger person I cannot say something thoughtlessly to older people. If I do not say something thoughtfully, it would be my fault." He also mentioned that because he was younger than most peer students, he did not interact with others well; "Most people (in the class) are seven or eight years older than me. What I try to say is that because I am young, I should not act carelessly…If I control myself, I could save face." EnHa who was the third oldest student among interviewees also stated that she carefully interacted with younger students:

EnHa: I think that age influenced interactions among students

I: How does it influence?

EnHa: Because I am old, I felt sorry when I interacted with younger people.

I: Why did you feel sorry?

EnHa: Although I am older than them, I could make mistakes when I said something.

Although the age-hierarchy heavily influenced the participants' interactions with peers, this age-hierarchy among the participants could be inverted by their computer skill level. According to the age-hierarchy, older people have more power than younger people and younger people should use a polite term of address when they talk to older people. However, computer skill level inverted this regulation of age-hierarchy. Although MeeJong is younger than SoHee, sometimes MeeJong did not use polite language when she taught SoHee. MeeJong mentioned,

When I teach SoHee, I say 'Do this and do that' in a hurry. So I asked for her consent. Although she is older than me, because I am in a hurry, I say 'do this and do that'

105

rather than 'please, do this and do that.' SoHee also gave me her consent [not to use the polite form when I speak to her].

During his interview, YongMok mentioned that he felt uncomfortable when he taught SokWoo who is much older than he is. YongMok stated,

When SokWoo is far behind, I feel sorry while teaching him, do this .... If we both do not understand [computer skills], it would be comfortable for both. I feel sorry because one knows and the other does not know and forgets. It would be good if both of us follow the steps.

Although YongMok failed to mention a clear reason for this feeling, the inverted hierarchy between YongMok and SokWoo may have made YongMok feel uncomfortable when he taught SokWoo.

Saving Face. I found that saving face influenced the participants' interactions with peers. In Korean culture, asking for help means admitting one's weakness or fault; so Korean people were understandably reluctant to ask questions or ask for help. Because Korean people believe that they have equal power compared to peers, when a student asks questions or asks a peer for help, he or she admits his or her inferiority. However, in Korean culture, because teachers are authority figures and they are considered as sources of knowledge, teachers are more powerful and students are less powerful. Therefore, Korean students could save face when they ask questions or ask teachers for help. Therefore, saving face influenced the participants' interactions with peers more than their interactions with teachers.

During interviews, some students stated that they felt shameful when they asked questions to their peers. HyunJin said that she seldom received information from peer students because she felt that her pride was hurt when peer students taught her; however, she told me that she was fine with receiving help from teachers. YoonSo also stated that he was reluctant to ask questions to JooWon, who had the highest computer

skills, when he took an introductory Internet course with him.

I: What did you feel when you learned something from JooWon?

YoonSo: At first, I did not ask him questions directly. I tried to read his mind.

I: Why did you do that?

YoonSo: Because of my pride. Although I am one of the top students in the introductory Internet course, I asked questions to him because I wanted to have the same level of computer skills that he had.

I also observed one case which may explain how saving face influenced students' learning. In a session, students learned how to divide frames in a website and how to make a hyperlink. In this session, most students had difficulties practicing these computer skills. I observed that SokWoo (seat number 8), one of the students who had the lowest computer skills, did not practice these computer skills during the lecture. Although he needed much help to follow the teacher's instruction, he asked for help only once and just watched computer screens and pretended that he did not have any problems in practicing the computer skills. I think that the reason for his behavior is because he wanted to save face by showing that he could practice by himself as other peer learners did. I also observed a case in which saving face influenced students' social interactions. Sometimes YoonSo (seat number 15) did not help EnHa (seat number 14) immediately; however, YoonSo knew that EnHa needed help to practice her computer skills. During the interview, I asked YoonSo why he did not help EnHa immediately and he answered: "Because I don't want to ignore her, I wait until she really needs my help." YoonSo wanted to save EnHa's face by waiting until she definitely needed another's help or she asked for help first.

The teacher as an Authority Figure. In Korean culture, a teacher is regarded as an authority figure. Korean people believe a teacher is the major source of knowledge; he or she has power in class; therefore, a student is subjugated to a teacher and a student must respect

the teacher. I found that this aspect of Korean culture influenced the students' social interactions with the teacher, and the teacher as authority figure interfered with students' processes of receiving information. I observed many cases in which the teacher exerted her presence as an authority figure in class. Sometimes the teacher declined to respond to the students who asked questions. For example, while practicing writing sentences, SoHee asked the teacher how to underline sentences; however, the teacher told SoHee to keep writing sentences and not to try to underline sentences. The teacher seemed not to pay attention to what students wanted to learn; rather, she might think what she attempted to teach is the most important thing. During lectures, the teacher also showed her authoritarian attitudes toward students. When she found students did not follow her lecture, she stopped these students and asked them to pay attention to her lecture. For instance, when the teacher began to teach how to download pictures on the Internet, she saw that ShinChol who had high computer skills already finished downloading pictures; instead of letting him practice this skill by himself, the teacher told ShinChol not to proceed. During her lecture the teacher asked SoHee five or six times to pay attention to her lecture rather than asking peers for help or practicing computer skills that she learned before. The teacher seemed to believe that her lecture is the most important source of knowledge and all students should listen to her lecture carefully.

Students might feel uncomfortable asking the teacher questions because of her presence as an authority figure, and such hesitation hindered their receiving information from the teacher. The teacher taught students how to watch a video clip in a full screen by right-clicking the mouse. Because SangHak (seat number 9) and YongMok (seat number 10) had never clicked the right button of a mouse before, they both wondered how to click the right button of the mouse. Instead of asking the teacher a question right away, they attempted the process independently for about three minutes. After consistently failing to watch a video clip in full screen mode, they finally asked a question to the teacher. In the same session, after

succeeding in watching a video in the full screen mode, SangHak and YongMok mistakenly stopped the video clip and they did not know how to replay it. Instead of clicking the play button again, they kept clicking the right button of the mouse. For five minutes they tried to replay the video clip, but they could not figure out how to replay the video clip. This time they did not ask for help from the teacher, and they abandoned their attempts to replay the video clip. SangHak told YongMok, "Do not ask for help from the teacher because she is busy." During his interview, I asked SangHak whether he would feel comfortable when he asked the teacher questions or when he asked his peers for help. SangHak answered, "When the teacher is near me, I could ask her questions; however, when she was far from me, I ask question to peer students." I think that SangHak and YongMok, who sat farthest from the front of the classroom, felt uncomfortable in asking the teacher questions because the teacher needed to approach them to answer questions. They might feel hesitant to ask the teacher to relocate in the classroom because of them. Actually, students, who sat at the back of the classroom, usually did not ask the teacher questions when she stayed at the front of the classroom; instead, when the teacher moved around the classroom, the students, who sat at the end of the classroom, asked the teacher questions. HyunJin (seat number 6), who sat at the front of classroom, also showed that she felt uncomfortable asking the teacher questions. In one session, the teacher taught how to down load e-mails onto the desktop and how to delete them. Because the teacher just said "click the e-mail file that you saved and delete it" rather than demonstrating the process with her computer and explaining what to do in detail, most students felt disoriented. Although the teacher stayed next to HyunJin, HyunJin asked a volunteer to approach her and teach her how to delete the file.

This section showed how Korean culture influenced students' interactions with their peers and the teacher. Age hierarchy made students cautious when they interacted with their peers. Saving face also made students reluctant to ask questions of their peers. Finally, in the

classroom, the teacher was an authority figure and her presence of authority hindered students' processes of receiving information from her.

Identity Development

The interviews suggested that students' computer learning and use influenced their identities. In this section, I will explain how students' computer learning and use increased their self-efficacy, raised their self-esteem, and made them feel less marginalized from current society and family.

Before mentioning these results, I will define self-efficacy and self-esteem first because these two concepts are confusing. Although some people regard self-efficacy as the same as self-esteem, these two concepts are different (Woolfolk, 2007). Self-efficacy is defined as a person's own belief in his or her capabilities of attaining certain goals. Bandura (1997) defined self-efficacy as "beliefs in ones' capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy is a future oriented belief in one's ability in a specific task (Woolfolk, 2007). Because self-efficacy is the belief that one can master a specific task, it may generate positive outcomes (Sandtrock, 2006). Self-esteem, however, refers to an individual's overall perspective of himself or herself (Sandtrock, 2006). Self-esteem is "an evaluative term for how we feel about ourselves as persons. For example, I feel good about myself or I feel like I am not a worthwhile person" (Jordan & Porath, 2006, p. 153). Although self-efficacy focuses on one's judgments of personal abilities in a given area, self-esteem involves emotional assessment of overall self-worth. In short, self-efficacy is related to asking "how well can I do this specific task?" and self-esteem is related to asking "how do I feel about myself?" In most cases, self-efficacy and self-esteem do not have a direct relationship (Woolfolk, 2007). Although I can feel highly inefficacious in one area, I can still have a high level of self-esteem. For example, I have low self-efficacy for playing baseball, but my self-esteem, my overall appraisal of self-worth, is

not affected because my life as a graduate student is not deeply involved with baseball. However, if my self-efficacy for studying a particular class keeps dropping, my self-esteem would begin to suffer (Woolfolk, 2007).

Increased Self-Efficacy. Interviewees in this study had been using computers for at least five months and these computer experiences make them feel that they had decent computer skills. Therefore, first, although computer level skills were different among the interviewees, most interviewees reported that computer use in their daily life increased their self-efficacy related to using computers. SokWoo's experience of using e-mail made him think that he had enough computer skill to feel that he had good computer skills:

> The teacher taught me how to send emails. I learned it and really I emailed my grandchildren. That was my first time to utilize science since I was born. When I send my messages to my grandchildren by utilizing science, I cannot tell you how much I am pleased. Therefore, in my heart, the blood of pleasure flows. So now I think I need to learn more with a sense of pride.

YoonSo felt his self-efficacy increase when he found how much his computer skills had progressed while interacting with his children. YoonSo who has used computers for almost ten years said that when his computer skill was low, he used to ask his children questions about computers. In the past, when his children taught him how to use computers he could not understand them because computer levels between him and his children were different. However, after his computer skills became higher, he could understand his children's explanation well. This experience made him have high self-efficacy in using computers. YoonSo stated, "I come to have a certain level of computer skill. I feel good." SangHak also stated that he gained self-efficacy in using computers:

> I: In the past, although some of your friends could use computers, you could not. How

did you feel about yourself at that time?

SangHak: I felt shameful because I could not talk to them …

I: Now you can use computers. How do you feel or think about yourself?

SangHak: I like it [my computer use].

I: How do you like it?

SangHak: In the past, I did not know even how to turn on and turn off a computer; however, now it's wonderful because I can surf the Internet ... I can search for information, play Korean card games, and read many news articles. If I click here and there, I can do it.

Although MeeJong did not maintain that her computer use increased her self-efficacy, she stated that computer learning would raise other's self-efficacy:

In the past, although my son told me that he would teach me how to use computers, I refused to learn. But now I realized that I wasted my time. Although I don't know how some people who are older than me could utilize their computer skills, I believe that their computer uses would increase self-efficacy. Their life can change because they are able to turn on and off computers and can talk about it. Their attitude can also change. Living positive life is good.

Second, some interviewees mentioned that their self-efficacy was enhanced when they taught their peers or when the teacher asked them to teach their peers. SoHee said although in class most times she has been taught by her peers, sometimes she taught them. When she taught her peers, she felt proud of herself because she could use computers.

I: How did you feel when you taught your peers?

SoHee: I felt good. I thought "sometimes peers did not understand all."

I: Why did you feel good?

SoHee: I feel proud of myself, because of the fact that I am not a computer-illiterate.

As I mentioned in the "social interaction" section, sometimes the teacher asked some students to teach peers. During the interviews, I found that when the teacher asked some students to teach peer students, these students felt high self-efficacy in using computers. These students interpreted the teacher's asking them to teach peers as her admitting their computer skills were higher compared to their peers; therefore, this experience made them assess their computer skills as higher than others. For example, ShinChol expressed his feeling in the following way:

I thought that the teacher recognized I was doing well. I did my best. Isn't this a benefit of my doing best? When I began to learn computers, I had a hard time. However, now I am very proud of the fact that I have the ability to teach others. I am very very proud.

YoonSo was also pleased with the fact that the teacher admitted he has high computer skills:

YoonSo: The main teacher told me that I was doing well when I took an introductory Internet course. She said that I was doing well. So I felt this kind of feeling.

I: What kind of feeling did you have?

YoonSo: The main teacher admitted that I had high computer skills in this class.

I: How do you feel?

YoonSo: I feel good although I do not express my feeling. The teacher admits my ability.

Although, ShinChol and YoonSo felt an increase in self-efficacy in using computers when the teacher asked them to teach peers, JooWon who was frequently asked to teach his peers by the teacher, did not mention this. Because JooWon who had been using computers for almost twenty years already recognized he had very high

computer skills by himself, the teacher's admitting his high computer skills did not influence his self-efficacy in computer usage.

Raised Self-Esteem. I found that most interviewees had positive self-esteem, which is emotional judgment of overall self-worth, and their positive self-esteem seemed to originate from their successful computer learning experiences. Although their abilities in using computers was just a part of their overall abilities, mastering computer skills seemed to have more symbolic meaning of their general mental abilities because using computers in old age is assumed to be a very challenging task. The interviewees' positive self-judgment of overall mental abilities resulted in optimistic emotional assessment of general self-worth.

SoHee's successful computer learning experiences made her feel that she had overall high capabilities not limited to computer skills. She said that after learning computer skills she felt she could take on any challenge and she could succeed in everything. When she first enrolled in an introductory computer course about seven months earlier, she thought that she did not have enough abilities to learn computer skills. However, she registered for her first computer course because she believed that "well begun is half done." In her seven months taking computer classes, she had succeeded in learning computer skills and these experiences made her feel good about her overall abilities. She stated, "I have gained confidence since I have been taking computer classes. Aha, I am able to learn computers. Now I know that if I take on a challenge, success or failure is up to me." In addition, ShinChol also found that his mental ability was still in good shape through taking computer classes. He stated,

> I learned new knowledge. I do not waste [my mental abilities]. If I keep developing
>
> and using [mental abilities], my brain would be useful in some other places. Then, I
>
> might write a novel if I come to be good at typing, although this thought might be
>
> useless. I think that learning computers is good for me.

JooWon's success in learning computer skills also made him feel good about his general abilities and encouraged him to step forward. JooWon stated, "I have a desire to learn something continuously with enthusiasm. Not only computers, I want to search for and take on something that older people can do in their daily lives." JooWon stated that his computer skills make him feel self-confident because he can do many things without others' help. He stated, "Before learning computers, I depended on other people for all things, small things or big things which I don't know. After learning computers, I came to have self-confidence because I can settle problems without depending upon others." In addition, YoonSo said that he felt he has progressed after using computers because he could receive more information though computers.

> YoonSo: People call the Internet a sea of information. If I don't know something, I can search this quickly and understand it. Therefore, I felt I have progressed.
>
> I: How did you feel in that way?
>
> YoonSo: In the past, if I did not know something, I looked it up in a dictionary or I asked my children questions. However, now I search on the Internet.
>
> I: Could you explain again what do you mean by progress?
>
> YoonSo: Knowledge, the perspective of seeing environments. The perspective of seeing the world.

MeeJong also felt good about herself because she spent her later life in a constructive way. She considered taking computer classes as using her life in a productive way. She stated, "I feel good. I invest in what is constructive. Someone says plant an apple tree even if tomorrow is the last day of the world. Although I don't know when my life will end, I do what I can do and share this until the end of my life." In addition, SokWoo mentioned that he came to have self-esteem when he took a computer class with his peers. He stated,

> Since I have taken an introductory computer class, to research computer studies with

men and women of all ages who are young at heart has a big meaning for me. I cannot be more pleased when I search for information with my slow hand by touching the keyboard and when I find a virtual world. So, with self-esteem I think to myself "work hard."

YoonSo felt that he has progressed when he compared himself with most of his friends who were computer illiterate. I asked YoonSo how he felt about himself when his friends knew YoonSo had high computer skills.

YoonSo: I feel good. I feel good. I also come to have self-confidence.

I: What kind of self-confidence do you have?

YoonSo: They cannot use computers but I can do it.

I: Do you have other feelings?

YoonSo: Frankly, I have loved the challenge a lot.

I: Do you mean trying to do new things?

YoonSo: Yes, my friends seem to abandon themselves to despair. They think there is no reason to learn computer skills in their age.

Interestingly, HyunJin felt good about herself because her daughter-in-law felt proud of her computer skills. HyunJin stated, "Can I say that I become elated? My daughter-in-law boasts of me in front of many people. She says my mother-in-law can send emails and send text messages by learning computer skills. She praised me. I am pleased."

Although most interviewees stated that they came to have self-efficacy in using computers and they felt good about their overall self-worth, I found that two interviewees, EnHa and YongMok, failed to gain self-efficacy or raise self-esteem through this experience. In class, many times EnHa failed to follow the teachers' instructions and practice computer skills although peers and teachers helped her. Her several failures in learning computer skills may have made her feel incompetent in using computers:

[Before taking computer courses] I corresponded with grandchildren through emails. Then I began to take computer courses to learn computer skills formally. I attempted to learn, but I cannot do because of my age….If I compared me with computer illiterates, I would be more active and feel proud of myself. However, if I compared me with other older computer users, I do not feel proud of myself because I do not use computer well.

EnHa who failed to have self-efficacy in using computers did not have noticeable changes in judging her overall self-worth.

I: You have learned computers for six months. Have you had changes in understanding your self brought by learning computers?

EnHa: I don't know. (Laugh) I do not have changes by now. I think if I use computers well, I may have changes. If I use computers well, I may have changes. I do not use computers well.

Perhaps because YongMok had been using computers for about ten years, he did not appear to be affected by his current computer learning.

I: How do you feel or think about yourself, who is a computer literate?

YongMok: I don't have any. I thought that I can use computers whenever I learn it. Because I still have such a young mind, learning computer does not influence me.

Even when he had been computer illiterate, he judged himself as a person who had abilities to learn and use computers. Therefore, his computer learning use did not change his judgment of his ability in computer use and overall self-worth.

Feeling Less Marginalized. The interviewees commonly stated that learning computer skills made them feel they were less marginalized from the current society and family. First, many interviewees mentioned that computer learning experiences made them feel they had become a member of the current society which is technologically advanced. SokWoo stated

117

that he felt a sense of belonging to this society when he used computers:

> Now I am serving a church as an elder. In the past, in order to make documents, I asked for church staff's help. After learning some computer skills, when I see a church staff member using a computer, I interrupt and ask if I can use the computer for a few minutes. In that way I want to let church staff know I am a computer literate. When I made documents using the computer and made copies, I am so pleased with the fact that I have become to a member of this world, a man of knowledge.

SokWoo also indicated that when he used computers, he felt great joy and he became a person who uses science in current society:

> When I reviewed computer skills, when I studied a book, when I achieved something step by step, and when I succeeded in making something with a purpose [using computers], I cannot tell you how much I am pleased. And when I sent my messages to my son, daughter, and grandson through e-mails, I was so pleased and I felt I became younger although I am an old man. I am pleased that I become younger because I walk in science.

When I asked SoHee what made her take computer classes, she said that she did not want to be estranged from the current society. She mentioned,

> I felt jealous of one of my friends who learned computer skills, because people call someone who does not know how to use computers Com-Meng [it means computer-illiterate]. I decided to learn computer skills in order not to be Com-Meng. South Korea is a powerful country in terms of Information Technology. I should not have a sense of alienation.

SoHee stated that her six-month computer learning made her feel that she came to be less marginalized from the society:

> I: For six months, you have taken computer classes. For this period, have you

118

noticed any differences in perspectives of understanding yourself?

SoHee: I earn self-confidence because I keep pace with the society of information technology.

I: Can you explain more about self-confidence?

SoHee: I can read newspaper, have information of international travel fees, and see weather forecast. It is good.

ShinChol also expressed his feeling of less marginalized from the current society which was obtained by learning computer skills in the following way;

I: You have learned computer skills since October 2004. Have you had any changes in understanding who you are?

ShinChol: I am wondering how to describe it. Can I say I am swimming in the stream of time? In the past, I sat back and watched the stream of time, but now I think I join in it.

I: What do you mean by the stream of time?

ShinChol: I think how the world works is the stream of time. I used to be out of the stream of time. If someone says something, I did not pay attention to it. However, now I read many news articles.

I: Do you mean on the Internet?

ShinChol: Yes. I opened my eyes to new knowledge.

YoonSo also indicated his feeling of becoming a member of this society in this way:

I: Now you can use computers very well. Compared to ten years ago when you were computer illiterate, how do you feel about yourself?

YoonSo: I think that I keep pace with IT society in some ways. There are only few people who can use computers among my same-age friend group.

> I: How many are they?

> YoonSo: About forty or fifty. Some of them surely can use some basic computer skills, but they cannot compete with my computer skills.

In addition, YoonSo stated that using computers helped him to have conversations with young people and thus belonging to the current society. He stated;

> When I talked with younger people, in the past I had many things that I could not understand. In the past, we did not use many English words in our daily lives. I also did not know words that were popular among young people. But now I can understand these words.

Although MeeJong did not mention that she felt less marginalized from the current society because of her computer uses, she believed that computer use was an important social trend:

> I always encourage other people to learn computer skills. I say "Do not keep away from the society. Not using computers is an escape from reality. The years and society demand that we should use computer. If we do not use computer, we would disappear in the dustbin of history. Do not waste your time."

Second, using computers also gave some interviewees a sense of being a significant part of their family. HyunJin used emails to contact her daughters living in the U.S: "I am glad that I can send emails to my two daughters who are in the U.S. …. I worried about international telephone fees but emails can be letters that we can exchange with each other." JooWon said that learning computers helped him to more chances to interact with his children. He indicated, "One of changes that I got from learning computers is that it becomes natural to ask my children questions about computers. I also can know what my children are interested in." EnHa also said that she had more chances to interact with her grandchildren through using emails:

> I: [You said] sometimes, you received emails from your grandchildren. Have they

talked about your using emails?

EnHa: They said they were very pleased with my emails. My daughter also said

she was happy with my using computers. She said she felt proud of me because I

can correspond with her through emails....

I: How do you feel when you send emails to your children and grandchildren?

EnHa: I am very glad to read the sentences that they wrote.

SokWoo stated that his children helped him to learn computer skills and he felt joy when he

corresponded with his children and grandchildren:

About three months ago, when I told my children I took computer courses, they

said that "my father discovers a new world." My first son bought me a new

computer although I did not know science well. I reviewed and studied the

computer skills that I learned from computer classes alone... I am pleased when I

also emailed children and grandchildren living in the U.S… I am pleased when I

sent my message to my grandson and granddaughter through computer network

and they said "Grandfather, I got it." and "I can read what grandfather wrote on

the screen." I am also happy when my grandchildren express their joy.

SoHee also indicated that she enjoyed emailing her children and her children also had

positive attitude toward her using computers:

I: Can you use the Internet at home?

SoHee: If I go to Internet search site, I can see everything such as health

information and new fad information. It is fun.

I: Why is it fun?

SoHee: Because I can send my children email. They said "my mom seems good

and happy."

In summary, I found that most interviewees' at least five-month computer learning and

using experiences both in and outside classroom increased their self-efficacy in using computers. Interviews suggested that most interviewees' computer using experiences made them feel good about their overall self-worth. In addition, many interviewees indicated that their computer usage made them feel they were less marginalized from current society and their families.

Chapter Summary

The purpose of this study was to understand how Korean older adults' computer learning in a face-to-face classroom is situated in a social context and how this learning influences older adults' sense of identities. Interviews and observations revealed four aspects of the social context which influenced the participants' computer learning processes in the classroom. This study also revealed how computer learning influenced older adult's identity development.

First, social interactions are embedded in students' processes of receiving information. If the participants failed to receive necessary information from lectures, they asked questions or asked for help from peers, volunteer teachers, and the teacher during practice time. Peers and teachers also voluntarily helped some students who needed help to practice computer skills. In addition, the participants also received essential information by observing how peers practiced their computer skills and how teachers taught other students. Although receiving help from others and observing others were beneficial to receive information in most cases, sometimes students' receiving wrong information hindered their learning processes. Second, learning tools such as computers and notes were embedded in the participants' learning. While using their own computers, the participants realized which information that they needed exactly and they made sense of computer skills out of information that they received from others. While reading their notes, the participants came to remember which information was needed in order to build their own computer skills. Because using learning tools was

closely related to students' ways of constructing their own skills and receiving information, problems with software and hardware, note-taking during lectures, and incorrect note-taking interfered with the participants' computer learning.

Third, this study also found that where students sat determined the participants' interactions with the teacher, volunteer teachers, and peers. Students in the front of the classroom had more interactions with the teacher who usually stayed at the front of the classroom. Volunteer teachers helped the participants in the first and second columns more quickly. Students usually interacted with peers in the same column and students in the third column had more difficulties in interacting with peers in other columns. Fourth, Korean culture were also embedded in the ways of the participants' social interactions. Because of age-hierarchy, the participants were careful when they interacted with peers. In order to save face, some students were reluctant to ask questions to peers. Because Korean people consider teachers as authority figures, the participants felt uncomfortable to ask questions to the teacher and also the teacher tried to control the participants' learning processes.

With regard to identity development, this study found that the participants' computer learning and uses increased self-efficacy related to using computers, raised self-esteem with relation to their mental abilities, and made them feel less marginalized from the society and family. The participants' computer use in their daily life and peer-teaching in the classroom enhanced their self-efficacy in using computers. The participants' successful computer learning experiences made them feel that their self-esteem was increased. The participants' computer use also resulted in their feeling less marginalized from the modern society and family.

CHAPTER FIVE

CONCLUSIONS, DISCUSSION, IMPLICATIONS AND SUGGESTIONS

The purpose of this study was to understand how Korean older adults' computer learning in a face-to-face classroom is situated in social contexts and how this learning influences older adults' identities. The research questions guiding this study focused on two areas: (a) How is computer learning of older adults embedded in the learning context in terms of social interactions, learning tools, physical environment, and culture in the classroom? (b) How do computer learning experiences influence older adults' identities? A qualitative research design was used to explore these areas, and interviews and observations were used as major data collection methods. Eleven sessions of an advanced Internet course for five weeks were observed and eleven interviews (ten students and one teacher) were conducted. Data was analyzed inductively using the constant comparative method from observations and ten interviews with students.

This study found four results regarding how older adults' computer learning in the classroom is embedded in the learning contexts; first, older adults' computer learning in the classroom was embedded in their interactions with teachers and peers; second, learning tools such as computers and notes were rooted in the ways of receiving information and making meaning of it; third, where students sat determined the participants' interactions with teachers and peers; and fourth, Korean culture such as age-hierarchy and saving face affected how the participants interacted with the teacher and their peers. With regard to how computer learning experiences influence older adults' identities, this study revealed that older adults' computer learning and use enhanced self-efficacy, raised self-esteem, and made them feel less marginalized from current society and family. In this chapter, I will present three conclusions based on these findings, and discuss the findings in light of the literature. Finally, implications for practice and recommendations for future research are included.

Conclusions and Discussions

The results of this study suggest three conclusions: (1) older adults' computer learning in a classroom is a situated activity, (2) older adults' computer learning occurs in overlapping communities of practice, and (3) older adults' computer learning in a classroom influences learners' identities.

Conclusion 1: Older Adults' Computer Learning in a Classroom is a Situated Activity

This study offers support for a major tenet of situated learning, which is an individual's cognitive activity is "stretched across mind, body, activity, and setting" (Lave, 1988, p. 18). In situated learning theories, social contexts are parts of an individual's learning process (Hansman, 2001; Wilson, 1993). Previous literature exploring situated learning theories in the adult education field identified several situational components in which learning are embedded. Wilson (1993) recognized the following three situational factors: interpersonal interactions, situationally provided tools, and interaction with the setting. Hansman (2001) also articulated the following four situational components which are embedded in learning practice: interactions among learners, the tools that they use, the activity itself, and the social context. In addition, Merriam, Caffarella, and Baumgartner (2007) argued that "the physical and social experiences and situations in which learners find themselves and the tools they use in that experience are integral to the entire learning process" (p. 178).

This study revealed which situational factors are embedded in older adults' computer learning in a classroom and how these factors are related to each other. As can be seen in figure 2, this study found that older adults' computer learning in a classroom was directly embedded in social interactions and tools and indirectly situated in the physical setting and Korean culture. Social interactions and learning tools are embedded in how the participants learned computer skills. Through diverse forms of social interactions such as asking for help,

125

peer-teaching, and observing, from their peers and teachers the participants received

information which was necessary for learning computer skills. While the participants used

their computers and notes, they built their own meaning of computer skills and in some cases

they come to know that they needed to learn some more basic computer skills. While the

physical setting and Korean culture did not directly affect the participants' ways of learning

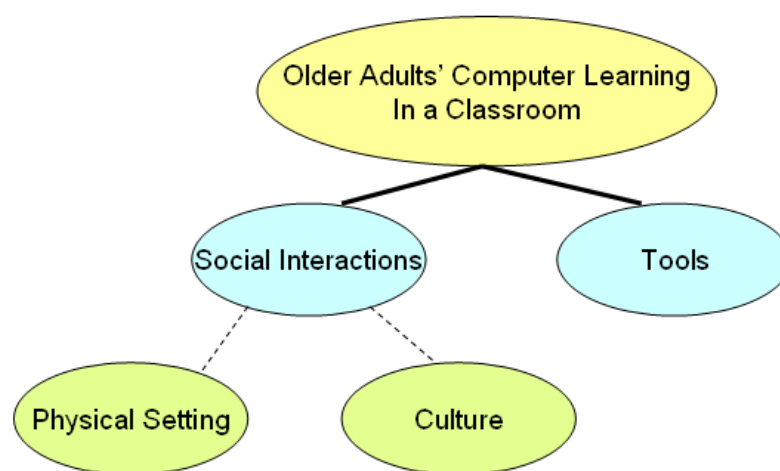computer skills, they did shape the participants' social interactions with their peers and

teachers.

Figure 2. The Four Situational Factors

Learning situated in social interactions

Because situated learning theory highlights that learning is a social practice, social

interactions among learners and teachers has been regarded as a major factor in learning

(Hansman, 2001; Schell, 2005; Wilson, 1993). Wenger (1998) maintained that people are

resources of information to each other, help others to make sense of situations, and share new

knowledge and ideas with each other. In our everyday life, learning and thinking occurs

during constant interpersonal interaction (Wilson, 1993).

This study found that older adults' computer learning in the classroom is directly

embedded in the participant's social interactions with their peers and teachers. Through

asking questions, asking for help, and observing others, the participants received necessary

information that they needed to learn computer skills. Although some studies suggest that the teacher's lecture is the most important aspect of older adults' computer learning in the classroom (Hollis-Sawyer and Sterns, 1999; Mayhorn, Sronge, McLaughlin, & Rogers, 2004; Morrell, Park, Mayhorn, and Kelley, 2000), this study revealed that social interaction among older computer learners is a significant factor embedded in their computer learning processes in classroom. Lave and Wenger (1991) argued that learning does not occur in a teacher/learner dyad; rather, newcomers learn when they interact with old-timers and near-peers. Lave and Wenger (1991) gave several apprenticeship examples which can be understood as situated learning. One of the situated learning examples was the apprenticeship of nondrinking alcoholics, and this example showed how members in the community of Alcoholics Anonymous learned from each other while they listened to others' stories. This example also demonstrated that people in this community become sober while they helped other members.

Several empirical studies using situated learning perspectives maintain that students' learning is embedded in their social interactions. Monaghan (2007) examined a graduate level course in a formal educational setting using a situated learning perspective and found that adult learners in the course formed a community of practice. In this community of practice, social interactions were very visible and adult learners were able to develop close relationships. This study found that the participants had more chances to work with peers and learned from each other in the community of practice than when they collaborated for just group work. Utley (2006) investigated which three dimensions of situated learning (social interaction, a reliance on authentic activity, and creation of learning community) were embedded into a graduate level course. Utley (2006) found the participants' learning was embedded in social interactions such as learning from peers, cooperative learning, and small group participation structures. Hansman and Wilson (1998) also confirmed that learning how

to write with computers in a classroom was embedded in the participants' social interactions. This study found that peer critique became a natural step for writing and peer critique was helpful. This study also revealed that the participants' critiquing of their peers' errors was also helpful for correcting their own writing errors. A study of older adults' computer learning showed the importance of social interaction. Cook (2007) conducted a qualitative study examining how older women over 70 years experienced computer learning environments and selected teaching strategies. Cook's study found that peer teaching took place in each class and peer teaching created an enjoyable atmosphere which motivated the participants to come back to each class and to learn computer skills well in order to give assistance to their peers.

Learning situated in tools

Because situated learning focuses on the social contexts to which individuals belong, the tools that individuals use in a specific situation have been studied as one of the situational factors rooted in learning. Situated learning perspectives argue that learning is tool dependent because the process of using tools structure cognitive practice (Wilson, 1993). Lave (1988) showed how much tools affect an individual's cognitive process. Adults who obtained lower scores in mathematical problems with a pen and pencil test received a higher score in similar mathematical problems in the real world of supermarket settings because the grocery items, coupons, and in-store specials became tools that they used to solve the problems.

In this study, the computers and lesson notes were two tools that were embedded in older adults' computer learning in classroom. The participants constructed their meaning of computer skills as they used computers and their lesson notes enabled them to remember what they needed to do to practice computer skills. Hansman and Wilson (1998) found adults' learning to write is situated in their computers, the tools that the participants used. The participants felt control over their time and confidence about their writing while they use the cut-and-past feature and grammar check functions. In addition, Namazi and McClintic (2003)

128

found that problems in hardware and software hindered computer learning and use for older adults in a long-term care facility. This study found that inputting passwords was discouraging for the participants, because they were not able to remember them; too many software icons on the desktop distracted the participants; and not knowing where to sign in on websites or software was a huge problem for the participants. Although some of the literature of older adults' computer learning did not use situated learning perspectives, the importance of learning tools was emphasized. Writing materials for taking notes, laminated index cards containing basic computer skills such as how to turn off computers, and senior-friendly printed resources with large size graphic illustrations are suggested as learning tools to enable older adults to learn computer skills more easily (Bean & Laven, 2003; Puacz & Bradfield, 2000).

In addition, this study found that an absence of a learning tool – LCD projector – can influence learning processes. Because computer skills can be better understood through observing rather than listening to a lecture, an LCD projector which showed students how the teacher used computer skills may have helped students. In every session, the teacher gave her lecture to explain computer skills. Since an LCD projector was not installed in the classroom, the teacher just told students how to use computer skills instead of showing how to do it. When she really needed to show how to use computer skills, she used her computer to show an example to students. My observation revealed that the most common problem to learn computer skills for students was that students could not find buttons that they needed to click. Because an LCD projector was not installed in the classroom, the teacher could not show students the location of buttons which students needed to click; instead, she just told students the name of buttons that they needed to click. Sometimes students failed to find the buttons with only verbal information.

Learning situated in physical settings

Physical settings in which individuals interact with others and use tools have been identified as one of situational factors embedded in learning process (Hansman, 2001; Wilson, 1993). Wilson (1993) argued that interactions between the setting and individuals determine learning processes. In this study because of the unique classroom structure, where the participants sat determined their interactions with the teacher, volunteer teachers, and their peers. Among the apprenticeship examples in Lave and Wenger (1991), the example of the meat cutters showed the importance of physical layout in a learning environment. If a meat cutter apprentice working at a wrapping machine could not observe how a journeyman cut meat because of meat department's layout, the apprentice would learn nothing about meat cutting. Namazi and McClintic (2003) found that physical environment was important for computer use among older adults in a long-term care facility. Because computers were placed in the library of this facility, a participant could not focus on her computer learning and use when she felt someone looked over her shoulder. Some participants complained about their lack of personal space, difficulties in adjusting chairs, and inadequate elbowroom. The authors argued that these unfavorable physical environments might have caused the discontinuation of some older adults' participation in their computer course. Stephenson (2002) indicated the importance of the room layout and seating arrangements in the following way: some older adults complained about their cramped rooms and became discouraged because they sat next to people who learned computer skills quickly and who made them feel slow.

Learning situated in Korean Culture

This study found that Korean culture affected the ways the participants interacted with teachers and peers. An age-hierarchy is embedded in how Koreans interact with each other (Clark, 2000); this study found that an age-hierarchy also affected social interactions

among older learners who are over 60 years old. Because almost 25 years age differences existed among the participants, some older students thought that they should be more cautious when they interacted with younger students, and some younger students thought that they needed to respect their older peers. This study also found that saving face made students hesitant to ask questions of or ask for help from their peers. De Mente (1999a) argued that in Confucianism saving face is more important than practicality and rationality because every behavior or word impacts one's sense of propriety and self-respect. Therefore, in order to save face, some students did not ask questions of or ask for help from their peers and teachers.

Confucianism assumes that teachers have authority and they are the primary source of knowledge; therefore, the teacher always leads the class and students are not encouraged to ask questions or express their opinions (Wang, 2006). This study found that although the teacher, who is in her forties, is younger than the participants, the participants perceived the teacher as an authority figure. This study found that because of teachers as authority figures, the participants were reluctant to ask the teacher questions. I observed that during practice time the teacher frequently used her computer to send text messages or surf the Internet and she moved around the classroom only a few times to give personal assistance to the participants at each session. Although the teacher should not have used her computers for her personal reasons during class, students did not complain about these behaviors during their interviews. Only one student, YongMok, complained about the teacher's slow pace of the course. Because Confucian assumes that teacher, parent, and king are equal (Kee, 2005), the participants might not criticize the teacher and they obey the teacher blindly (Liu, 2001). In addition, this study also found that the teacher regarded herself as an authority figure because she tried to control the students' behaviors during her lecture time.

My observation found some participants' behaviors were not in accordance with Confucianism. In Confucianism, harmony in a community always is valued more than

individual achievements (Clark, 2000). However, there were two conflicts among the participants for their individual interests. In the first session, YoungJoo was very upset at MeeJong because MeeJong took a seat that YoungJoo wanted. These two participants thought that if they sat in this seat, they could easily see the whiteboard and could have more interactions with the teacher. In addition, at another session, YoungJoo and YouJin had a quarrel about installing a CD software program because both of them wanted to borrow it from the teacher at the same time. I assume that although Confucianism heavily influenced the participants' behaviors and attitudes, for some students the value of learning is more significant than harmony in their community.

In conclusion, this study found that older adults' computer learning in a classroom is directly embedded in social interactions and learning tools, and indirectly rooted in physical settings and Korean culture. This study revealed that older adults' computer learning has to be understood as essentially integrated with the situation where learning occurs (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Wilson, 1993); considering social interactions, learning tools, physical settings, and societal culture is fundamental to understanding older adults' computer learning in a classroom. The previous literature of older adults' computer learning has focused more on individual changes in cognition and physical abilities, motivations to learn, and instructors' teaching methods; therefore, the literature failed to examine situations in which older adults' computer learning is embedded. Older adults' computer learning is not only related to older adults' cognitive activities but also related to the situations where the learning occurs.

Conclusion 2: Older Adults' Computer Learning Occurs in Overlapping Communities of Practice

Because situated learning perspectives view that individuals learn as they are involved with other people in social contexts, a community to which an individual belongs has been

highlighted. After Lave and Wenger (1991) developed the concept of "communities of practice," previous literature adopting situated learning perspectives has paid attention to communities of practice and found that learning is deeply embedded in each individual's belonging to communities of practice. Schneider (2007) argued that although most of science teacher do not realize they are belong to a community of science teacher educators, they develop their teaching abilities in this community of practice. Chang, Chen, and Li (2008) revealed that K-12 students improved their coursework activities while constructing a community of practice via a web-site. Richards (2007) showed that preservice teachers and graduate students could develop a community of practice and in this community they sharpened their abilities and succeeded in developing a summer literacy camp to meet the literacy instructional needs of children at-risk.

This study examining older adults' computer learning in a formal educational setting also revealed that the older adults engaged in *two* communities: a community of older computer learners in a classroom and a community of general computer users. Although Lave and Wenger (1991) initially used the term "communities of practice," Wenger (1998) defined unique characteristics of communities of practice, which differentiate this concept from other models of collaborative learning. Wenger (1998) identified three dimensions of communities of practice: mutual engagement, joint enterprise, and shared repertoire. Because I believe these three dimensions describe the distinctive characteristics of communities of practice, I will describe how these dimensions apply to the two communities of computer users. In addition, Wenger (1998) described three different ways of belonging to communities of practice: engagement, imagination, and alignment. Because I think that identifying three ways of belonging is beneficial for understanding the characteristics of each community of practice, I will also describe how the participants belong to the two communities of computer users.

Community of older computer learning in a classroom

First, Wenger (1998) maintained that mutual engagement, not conceptual thinking, is one of basic characteristics of communities of practice. Members in a community of practice are involved with each other and their engagements bring members together (Smith, 2003). When members interact with each other and share the same experience, they become members of the same community of practice (Wenger, 1998). As members of a community of *older* computer learners in a classroom, the participants came to the classroom twice a week for two months, and they shared the same experience, taking the same classes. The participants' regular gathering in the same class gave them the feeling of mutual engagement. Sometimes, the participants met older computer learners who took the same previous course in the hallway or lobby at the senior center where this study was conducted. MeeJong and ShinChol stated that they kept in touch with their former peers through email. Wenger (1998) insisted that when mutual engagement continued, members come to have both close relationships and negative feelings such as conflicts and disagreement, which are all forms of mutual engagement. Some of the participants had developed very close relationships since they took the same introductory computer course. For instance, MeeJong and NamSoon, HyunJin and SoHee, SangHak and YongMok had very close relationships and commonly these pairs had taken the same computer courses for at least three months. In addition, after every session, these couples had ten to twenty minutes to chat or discuss the class on their way home. I also observed some conflicts and disagreement among the participants during class. As I mentioned in the previous chapter, some students had conflicts with other students about their seats on the first day of class. I also observed arguments between two students because these two students wanted to borrow a software CD from the teacher at the same time. In a community of practice, because each member has different capabilities, understanding how to receive assistance from other members is more important than doing

everything alone (Wenger, 1998). All of the participants were aware of who had more computer knowledge and skills than they did, and they asked for help from those who have more knowledge and skills. Also, some participants who had high computer skills gave help to their peers voluntarily before their peers asked for help. Because the participants who had high computer skills indicated that peer-teaching was a learning experience, and the participants who received help from their peers said peer-teaching was beneficial to them, heterogeneity among the participants benefits all of the students in the classroom (Wenger, 1998).

Joint enterprise is the second feature of communities of practice. Joint enterprise is what members of communities of practice developed together while they respond to their situations and demands (Wenger, 1998). Joint enterprise shows what a community of practice is about and a sense of joint enterprise develops when members interact with each other around things that matter to them (Smith, 2003). The computer skills that the participants learned together and taught each other were the joint enterprise of a community of older computer learners in a classroom. In the course that this study conducted, only a few participants (SoHee, JooWon, ShinChol, and YoonSo) were able to practice the computer skills that the teacher taught them without other's help. Most of the participants needed their peers' help. For example, in a session when the participants learned how to make a video clip and most of participants made their own video clips while they learned from their peers. At this time, the computer skill of how to make a video clip was a joint enterprise in the community of computer learners in the course. Wenger (1998) maintained that institutional, historical, and social contexts influenced joint enterprises in a community of practice. I observed an example showing how institutional contexts affected the joint enterprises in the community of practice. For instance, in one session, the teacher taught the participants how to see video clips on the website of the senior center where they took the course. The teacher

said that because the number of people who watched the video clips on the senior center website was too small, the staff of the senior center asked the teacher to teach her students how to watch the video clips. Therefore, although the teacher and students did not want to learn how to register themselves on the website and watch the video clip, they learned it and watched them together. In addition, historical and social contexts also affected the participant's joint enterprise. During her interview, the teacher said that in the past the main curriculum of the advanced course, teaching expanded Internet skills, was how to make a homepage; however, because now people frequently use blogs and Internet portal sites rather than individual homepages, she changed her teaching curriculum and focused on teaching how to use blogs and Internet portal sites more effectively.

The third characteristic of a community of practice is a shared repertoire, which is members' shared resources such as routines, words, tools, and ways of doing things (Wenger, 1998). While members of communities of practice mutually engage with each other and engage in joint enterprises, they use the same resources together. In addition, because members in a community of practice develop the shared repertoire over time, shared repertoires carry the accumulated knowledge of the community (Smith, 2003). In a community of older computer learners in a classroom, the most recognizable shared repertoire was a portal website which the teacher used to teach how to use emails, send free text messages, and read news articles. Even though most people outside of the classroom do not use the portal site or even know that it exits, the participants used this website very often because the participants first learned how to use email, send text messages, read news articles using this portal site. Wenger (1998) maintained that a shared repertoire in a community of practice reflects mutual engagement in the past and also is projected into future situations of communities of practices. The portal website that the participants commonly used showed what the participants did to learn computer skills. At the same time, this website influences

136

the future of the community of older computer learners because the participants may continue to use this website in the future.

Community of general computer users

The observations and interviews suggested that the participants belonged to another community of practice, which is a community of general computer users. Although levels of computer skills and computer use varied among the participants, all participants used computers in the classroom or at home. Their computer using experiences made them members of a community of general computer users. I will describe the three dimensions of a community of general computer users that Wenger (1998) indicated. First, the participants in this study had mutual engagement virtually and actually. Most of the participants used email to stay in touch with their family. Some participants also indicated that they interacted with other computer users through diverse websites. For example, JooWon, who wanted to live and farm in the countryside, frequently interacted through a website with people who have been living and farming in the countryside or who were preparing for their new lives in the countryside. YoonSo also used a website to post his opinions and read others' messages in order to take care of problems in his regional community. The participants sometimes met other computer users in the real world. First of all, the participants met their peers and teachers who were also general computer users while taking classes. In addition, in their everyday lives, the participants met general computer users and shared their computer using experiences with each other. For example, SoHee said that other older computer users encouraged her to keep learning computer skills because she might forget computer skills if she did not use them continuously.

Second, the participants constructed joint enterprises with other general computer users. In many cases, the participants built their relationships with other general computer users while responding to institutional, historical, and social situations. Many participants

used email to correspond with their children and grandchildren. In the past, writing letters or calling were the only ways to communicate with family members. However, for younger generations now, using email has become one of the easiest methods to communicate. Particularly if the participants have children or grandchildren living in the U.S., using emails is the cheapest communication method. While responding to these social contexts, the participants built their relationship with their families who are also members of a community of general computer users. In addition, a few participants built virtual communities as joint enterprises with other general computer users. For instance, JooWon constructed a virtual community which offers and shares diverse information about living and farming in countryside. He also organized a virtual community for Air Force alumni in order to find his fellow soldiers. These virtual communities are also responsive to the Korean social context in which using computers has become very common. In the past, in order to allocate information about living and farming in the countryside, people needed to meet in one place. With advanced technologies, people exchange their information without moving outside of their homes.

The third dimension of a community of practice is a shared repertoire; a shared repertoire is a community's shared resources which the community has created and which are part of the community's practice such as actions, tools, words, and routines (Wenger, 1998). In this study, the participants used computers, the Internet, some software such as Windows, and Internet Explorer, and computer terminology which other general computer users also used. The participants also shared some routines with other general computer users such as logging into their email accounts, searching for some information using a search engine site, and reading news articles on the web.

Modes of Belonging

Wenger (1998) argued that members belong to a community of practice through engagement, imagination, and alignment. Because the ways the participant belonged to the two communities of computer users describes the characteristics of the two communities of computer users well, in this section I will discuss the participants' three modes of belonging. First, members belong to communities of practice through engagement. Wenger (1998) emphasized engagement has apparent physical limits in time and space and each member of a community of practice has certain limits of activities and people they can handle. In the community of older computer learners in a classroom, members engaged in each other when they took computer courses or when they talked about computers. The members of the community of general computer users mostly engaged with each other in the virtual world while they use blogs and email.

The second mode of belonging is imagination, which refers to a creative process of expanding our experiences by transcending our time and space and generating new engagement with a new world. In the community of older computer learners in a classroom, members can go beyond their time and space while they hear computer learning experiences of other older computer learners. In the community of general computer users, through imagination members can belong to their community while they use computers and imagine other users; for example, one user can send some pictures through email and they can imagine how their grandchildren would be glad to receive the pictures.

Third, members of communities of practice need to align their energy and activities in order to belong to broader enterprises of a community of practice. In order to learn more computer skills, the members of the community of older computer learners in a classroom need to coordinate their energy and time to learn computer skills. For example, the participants in this study need to come to the senior center two days a week to learn computer

skills. The members of the community of general computer users also need to organize their time to use computers in their everyday life. For example, ShinChol said that in order to use computers, he reduced his time of playing Go.

In conclusion, this study found that older computer learners in a classroom belong to two overlapping communities of computer users. Wenger (1998) argued that an individual can participate in numerous communities of practice at once and this study found that older adults' computer learning occurs in the two overlapping communities of computer users. The two communities of computer users showed that older computer learners in a classroom are interrelated to each other through their mutual engagement, joint enterprise, and shared repertoires. Paying attention to how older computer learners engage in the two communities of practice allow us to understand that older adults themselves are active players "who discover, shape, and make explicit their own knowledge" (Hansman & Wilson, 2002, p. 145). If we understand that older computer learners in a classroom comprise communities of practice, older computer learners themselves can develop their own learning schedules and build their own leadership (Hansman & Wilson, 2002). As Wenger and Snyder (2000) argued, in a community of practice, the effective learning depends on learners themselves, who can be mentors and coaches to their peers. Brown and Duguid (1991) maintained that learning is fostered best by promoting access to and membership of the communities of practice that are targeted, rather than explaining abstractions of individual practice. This study showed that older adults in a computer classroom belong to communities of practice, and understanding communities of practice is necessary to understand older adults' learning processes.

Conclusion 3: Older Adults' Computer Learning in a Classroom Influences Learners' Identities

Sociological approaches to identity argue that an individual can have a number of different identities with relation to their social roles (Illeris, 2006). This study found that a

new social role of older adults, computer users, formed their new identities. The findings of this study supported the important assumption of situated learning which is "learning thus implies becoming a different person … to ignore this aspect of learning is to overlook the fact that learning involves the construction of identities" (Lave & Wenger, 1991, p. 53). While trying to unify view of working, learning, and innovation, Brown and Duguid (1991) argued that learning in the workplace can be best understood through communities that an individual participated in and their changed personal identities. The main issue in workplace learning is "becoming a practitioner not learning about practice" (Brown & Duguid, 1991, p. 48). Although cognitive perspectives understand learning and development as progress along a trajectory of skills and knowledge, in situated perspectives learning and development are understood as "progress along trajectories of participation and growth of identity" (Greeno, 1997, p. 9). This study found that older adults' computer learning and use increased their self-efficacy with regard to computers, raised their self-esteem, and enabled them to feel less marginalized from current society and family. In this section, I will explain how this identity development is related to the two communities of computer users using Bandura (1997), Erikson (1982), and Wenger (1998).

Before mentioning the participants' identity development in the two communities of computer users, let me briefly explain the sources of self-efficacy and self-esteem which were identify by Bandura (1997) and identity issues described by Erikson (1982), which are related to the participants' identity development. Bandura (1997) argued that "enactive mastery experiences" and "vicarious experience" are sources of self efficacy, which refers to a person's own belief in his or her ability in a certain area. Enactive mastery experiences are the most powerful source of self-efficacy because successful experiences are the most obvious evidences that show one's competent abilities in one area (Bandura, 1997). Bandura (1997) defined vicarious experience as social comparison which evaluates one's ability.

Because in most cases people cannot judge their abilities objectively, they tend to measure their abilities by comparing them with the attainments of others (Bandura, 1997). Bandura (1997) argued that "personal competences" and "social evaluation" are sources of self-esteem, which refers to affective judgment of one's self-worth in a certain area. If people accomplish certain tasks and this experience fulfill their standards of merit, they come to gain personal competences, which enable them to have positive self-worth (Bandura, 1997). In addition, people evaluate their self-worth by others' standards which are imposed on them rather than by their accomplishments (Bandura, 1997). Erikson (1982) understood identity development as eight psychosocial stages, and stage seven is related to how the participants felt a sense of being less marginalized while they use computers. In stage seven, Generativity vs. Stagnation, people can achieve generativity when they take care of future generations and contribute to the society; however, people suffer from stagnation when failing to influence future generations.

Identity development in a community of older computer learners in a classroom

This study found that the participants' belonging to a community of older computer learners in a classroom enhanced their self-efficacy and increased their self-esteem. Wenger (1998) argued when members of the same community of practice interact with each other, they develop their identities as the community members. In the classroom, some participants gained increased self-efficacy in relation to computer skills when they taught their peers or the teacher recognized their computer skills, which were vicarious experiences for them according to Bandura (1997). When the participants taught their peers or the teacher acknowledged their high computer skills, they achieved self-efficacy because they measured their computer use ability by comparing with abilities of other older computer learners or computer-illiterates. As I mentioned in chapter four, sometimes the teacher asked some students who had high computer skills to teach their peers. ShinChol, who was asked by the

teacher to help his peers stated, "I thought that the teacher recognized I was doing well...When I began to learn computers, I had a hard time. However, now I am very proud of the fact that I have the ability to teach others." Although most of the time SoHee had difficulties in learning computer skills because of her lack of basic computer skills, her teaching experience also gave her a vicarious experience. SoHee mentioned that her teaching experiences allowed her to compare her with computer illiterates, which enabled her to feel good about her computer skills.

Wenger (1998) also maintained that in a community of practice, people build their new identities in paradigmatic trajectories. Computer courses offered by the senior school where this study was conducted had a certain sequence of computer courses, and the teacher encouraged students in the classroom to follow this sequence. The teacher encouraged the participants to take another advanced course, teaching how to take and edit digital pictures next month. Because the computer courses in this senior center had paradigmatic trajectories, the participants developed their identities while comparing them with old-timers and newcomers in this trajectory. The participants in an advanced course may regard themselves as an experienced computer learner when they compared themselves with computer learners in an introductory course. This vicarious experience in the paradigmatic trajectory can be another source of the participants' enhanced self-efficacy in computer use.

In addition, Wenger (1998) maintained that when people achieve competence in a community of practice, they develop their new identities. This study found that the participants' computer learning experiences in classroom enabled them to gain a competence in their computer use skills, which is a source of self-esteem for their mental abilities. JooWon gained personal competence by learning computers. He stated, "Before learning computers, I depended on other people for all things... After learning computers, I came to have self-confidence because I can settle problems without depending upon others."

ShinChol also expressed his self-esteem in connection with his mental abilities obtained by using computers in this way: "I learned new knowledge [by using computers]…If I keep developing and using [mental abilities], my brain would be useful in some other places. Then, I might write a novel if I come to be good at typing."

Identity development in a community of general computer users

This study found that the participants' belonging to a community of general computer users enhanced their self-efficacy, increased their self-esteem, and resulted in a sense of being less marginalized from current society and family. In a community of general computer users, through interactions with other computer users the participants developed a new identity (Wenger, 1998). SokWoo's successful experience in sending email to his grandchildren, who are also computer users, is enactive mastery experiences, which enabled him to enhance his computer use self-efficacy. SokWoo stated, "The teacher taught me how to send emails. I learned it and really I emailed my grandchildren ... in my heart, the blood of pleasure flows. So now I think I need to learn more with a sense of pride." YoonSo mentioned that in the past when he had lower computer skills, he could not understand his children's explanations of computer skills; however, now he could understand his children's explanations because of his high computer skills. YoonSo's interactions with his children became his enactive mastery experiences.

According to Wenger (1998), in a community of practice people develop their new identities when they achieve competence. In the community of general computer users, while they use computers some participants in this study achieved competence, which is a source of enhanced self-esteem. YoonSo expressed his increased self-worth due to personal competence in computer use in this way: "People call the Internet a sea of information. If I don't know something, I can search this quickly and understand it. Therefore, I felt I have progressed." According to Bandura (1997), social evaluation is one of sources of self-esteem and in this

study there was only one case which showed social evaluation is a source of self-esteem. HyunJin achieved self-esteem because her daughter-in-law felt proud of her self who became a computer user. HyunJin mentioned, "Can I say that I became elated? My daughter-in-law boasts of me in front of many people. She says my mother-in-law can send emails and send text messages be cause of learning computer skills."

The participants' belonging to a community of general computer users allowed them to feel a sense of being less marginalized from the society because in current society most society members are computer users. MeeJong mentioned that "not using computers is an escape from reality. The years and society demand that we should use computer. If we do not use computer, we would disappear in the dustbin of history." SoHee also argued that using computers made her keep pace with the society; "I decided to learn computer skills in order not to be a computer illiterate. South Korea is a powerful country in terms of Information Technology. I should not have a sense of alienation." The participant's becoming members of the community of computer users would be a means of achieving generativity, contributing to future generation (Erikson, 1982). Some participants maintained that their computer use allowed them to interact with younger people, who are also members of the community of general computer users. For example, JooWon mentioned that his computer use enabled him to talk about computers with his children and to understand what they are interested in. YoonSo also stated that because of his computer use, he could understand words that younger people use.

In conclusion, this study found that older adults' identity development due to their computer learning is related to their participation in overlapping communities of practice. This study revealed that older adults' computer learning is a process of becoming full participants of communities of computer users (Lave & Wenger, 1991). As older adults gradually interact with other members and they achieve competence in the communities, they

become full members of communities of computer users. The older adults' becoming full participants in communities of computer users enable them to have enhanced self-efficacy, earn raised self-esteem, and to feel less marginalized from family and society.

This study contributed to the literature of situated learning in the following three ways. First, this study revealed that learners can develop communities of practice in a teacher-driven formal classroom setting. Most studies using situated learning theories have examined how communities of practices can be developed in informal settings such as apprenticeships, workplaces, a religious group (Chang, Chen, & Li; 2008, Lave & Wenger, 1991; Merriam, Courtenay, & Baumgartner, 2003; Richards, 2007; Schneider, 2007; Wenger & Snyder, 2000). Although Monaghan (2007) found that in a graduate course in a formal classroom students can develop communities of practice, the instructor of this course attempted to develop communities of practice among students. However, this study revealed that the participants developed a community of computer learners in a classroom without other's help and showed that their learning and identity development are embedded in this community of practice.

Second, this study described how social interactions are deeply embedded in learning processes. We assume that in a teacher-driven formal education setting, the interactions between teachers and learners are the most important interactions in learning. However, this study revealed that learners' social interaction among peer students such as peer teaching and observing others is core social interactions through which students receive information. As was shown in Figure 2, this study also found the physical setting and culture of the society are embedded in learning process through learners' social interactions with teachers and peers.

Third, this study found that the culture of this society is embedded in students' learning processes. Literature in situated learning has emphasized that the culture in a community of practice is embedded in practices of each individual (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Wenger, 1998; Wenger & Snyder, 2000). However, there is little research

explain how culture affects a community of practice. Although Hansman (2001) argued that the social context structures learning, she failed to describe how culture at the society level is embedded in learning processes. This study identified aspects of Korean culture that shaped learners' social interaction in a community of practice.

<div align="center">Implications for Practice</div>

Although South Korea is one of the most advanced informational societies in the world, the digital-divide related to demographic gaps in access to technology, has been regarded as a severe social problem. Because the South Korean government identified older adults as one of the information-neglected groups, the government has provided diverse support for teaching older adults computer skills. If older adults do not know how to use computers, they could not take a web-based computer instruction or computer-assisted classes in order to learn computer skills; therefore, in most cases, computer learning programs for older adults occur in real classrooms.

The cognitive perspective enabled researchers to develop technologies and teaching methods adapted for age-related changes in older adults' cognition and physical function. On the other hand, situated learning perspectives show that older adults' computer learning practices in the classroom involve individuals' interactions with other people, materials, social contexts, and physical settings and individuals develop their identities as members of communities of practice (Greeno, 1997). Therefore, through the results of this study using situated learning theories, practitioners can pay more attention to social participatory aspects of learning and learners' identity development. The results of this study provide practice implications of computer educators for older adults, policy makers as well as older computer learners.

First, an important implication of this study involves computer educators of older adults. Situated learning perspectives enable computer educators to recognize that older

adults' computer learning does not solely depend on their teaching methods and older adults'

age-related changes in cognition and physical functions. If computer educators understood

how social interactions among students were important for their learning, they could develop

an atmosphere in which students actively learn from each other and teach their peers. For

example, Pitri (2004) found that purposeful and focused interaction and communications

among students were very important factors in situated learning. Pitri (2004) suggests that

teachers who want to promote situated learning need to encourage students to express their

needs and interests and interact and communicated within their physical and social

environment. Based on the findings of this study, computer educators of older adults need to

share their authority so that learners can more easily interact with teachers. In addition,

particularly in South Korea, "saving face" is important for older adults who are more

influenced by Confucianism than younger generations. Therefore, computer educators in

South Korea need to develop an atmosphere in which each individual can save face. For

example, educators need to help students who have difficulties before they ask for help. This

study also found that learners sitting at the front of the classroom where the teacher usually

stayed have more chance to interact with the teacher. Therefore, educators need to move

around a classroom frequently in order to give all students an even chance to interact with the

teacher.

In situated learning perspectives, cognition is interwoven with the context where

learning occurs (Rogoff, 1984); therefore, learning processes need to be closely related to

learners' everyday worlds (Caffarella & Merriam, 2000). Greeno (1997) argued that in

situated learning perspectives, transferring knowledge is dependent on consistency of

learners' participatory patterns across situations. Therefore, in order to foster transfer of

learning, computer educators of older adults can develop a curriculum that is similar to older

adults' computer use patterns at home where they usually use computers. For example, older

adults use computers for communicating, shopping, and searching for information and were likely to use search engine sites for searching for information, playing games, and reading articles (Hilt & Lipschultz, 2004; Silver, 2001). Therefore, computer educators of older adults can emphasize these computer skills that older adults usually use at home.

Second, another implication of practice from my study is for policy makers for older adults' computer learning in South Korea. This study suggests that policy makers need to pay more attention to social culture, learning tools, and interactions among students and teachers. This study found that because for the participants the teacher was an authority figure, the participants were reluctant to ask for help from the teacher; however, the participants did not hesitate to ask for help from assistant teachers. Therefore, the Korean government policy maker can encourage each facility in which older adults learn computer skills to recruit volunteering assistant teachers. In addition, in order to make learning in the classroom be an authentic activity, computers and software in the classroom needs to be updated. This method minimizes the differences between the computers and software that they use in the classroom and those that they use outside of the classroom. In order to make older adults' computer use in the classroom be a more authentic activity, the Korean government can also suggest to educators that they needed to use textbooks or printed materials; therefore, older computer learners can use the same materials both in classroom and outside of classroom.

Last, this study can be utilized by older computer learners. This study implies that older adults' cognitive abilities and efficient teaching strategies are not the only important factors, but also social interactions, learning tools, physical setting, and social culture are significant for their computer learning. Therefore, in order to be competent computer learners and users, in the classroom older adults can actively interact with their peers and teachers, examine negative aspects of physical settings and learning tools and attempt to change it, and consider how they can respond to social culture that interferes with their learning. For

149

example, in this study the students who sat at the back of classroom can ask the teacher questions during break or after class, so that they can approach the teacher in order not to make her move. In addition, this study describing how older adults' computer learning influence their identities allows older adults to reflect on how much their participation in computer learning is significant for their current and future life (Greeno, 1997). Therefore, older adults' participation in computer learning in the classroom is an "integral part of their development as successful and productive individual agent and learners" (Greeno, 1997, p. 15) and meet their identity issues in old age.

Suggestions for Future Research

The purpose of this study was to understand how Korean older adults' computer learning in a face-to-face classroom is situated in a social context and how this learning influences older adults' identities. This study used a qualitative case study and based on the findings, the following recommendations are suggested for future research.

First, most of the participants of this study were computer users between introductory and intermediate levels and they were newcomers in the community of computer learners and computer users. The findings of this study would be different for some older adults who have higher computer skills and who are full practitioners in communities of practice. Therefore, I recommend repeating this study with a sample of older adults who are more experienced computer users.

Second, older residents in long-term care facilities may need to learn computer skills more in order to communicate with the outside world. Compared to older adults residing in their home, older adults in a long-term care facility have frail mind and body and they may have different identity issues compared to older adults who are healthy and reside in their home. Namazi and McClintic (2003) taught older adults computer skills in a long-term care facility and found that older residents were able to learn computer skills and they successfully

used computers for a variety of reasons. Therefore, I recommend a study which examines through a computer course in long-term care facility how older residents build their communities of practice and how their identities are influenced by their computer learning.

Third, recently older adults have actively engaged in a variety of activities in virtual world. For example, SeniorNet, a non-profit organization, provides a variety of on-line courses such as digital photography, health, personal finance, and writing for only older adults. In addition, older adults in SeniorNet participate in diverse activities in virtual communities with their age-peers and younger generation. Recent literature has examined virtual learning environment and Hayes (2006) found that adults' activities in social virtual world can be understood as situated learning activities. A study looking at how older computer users form communities of practice in the virtual world can provide additional insight into older adults' computer learning and use.

Fourth, Niewolny and Wilson (2006) argued that studies using situated learning perspectives need to examine power relationships determining who participates in and how members learn and interact within communities of practice. In South Korea, the teacher and the older people have more power than students and younger people. In addition, this study found that age-hierarchy could be inverted by computer skills level. Therefore, I recommend a study which investigates how teachers as authority figures, the age-hierarchy in Korean culture, and computer skills form power relationships and how these power relationships are embedded in computer learning processes.

Fifth, this study found that learning tools (computers and notes) enabled students to build their own knowledge with information that they received from others. Although Hansman (2001) and Wilson (1993) articulated that learning tools are one of the factors which are embedded in learning processes, they failed to describe what learning tools are embedded and how these learning tools are embedded in learning processes. Because this

study examined a computer course, learning tools are easily identified. I recommend a study which examines how learning tools such as language and symbols are embedded in a course in which learning tools are not easily identifiable.

<div align="center">Chapter Summary</div>

Based on the analysis of observation and interviews with ten older adults taking a computer course, three conclusions were presented on how older adults' computer learning in a classroom is situated in social contexts and how this learning influences older adults' identities. First, older adults' computer learning in a classroom is a situated activity. Second, older adults' computer learning occurs in overlapping communities of practice. Third, older adults' computer learning in a classroom influences learners' identities and their identity development are their processes of negotiating identities in the two overlapping communities of computer users.

REFERNECES

American Library Association. (2004). Seniors and computer technology. *Library Technology Reports, 40*(3), 32-40.

Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative data*. New York: New York University Press.

Baldi, R. (1997). Training older adults to use the computer: Issues related to the workplace, attitudes, and training. *Educational Gerontology, 23*(5), 453-465.

Baltes, P. B., & Lindenberger, U. (1997). Emergence of powerful connection between sensory and cognitive functions across the adult life span: A new window to the study of cognitive aging? *Psychology and Aging, 12*(1), 12-21.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

Bean, C., & Laven, M. (2003). Adapting to seniors: Computer training for older adults. *Florida Libraries, 46*(2), 5-7.

Bee, H., & Bjorklund, B. (2004). *The journey of adulthood* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Begley, S. (2006). *Train your mind, change your brain: How a new science reveals our extraordinary potential to transform ourselves* New York: Ballantine Books.

Blumer, H. (1969). *Symbolic interactionism: Perspective and method*. Berkeley, CA: University of California Press.

Bogdon, R., & Biklen, S. K. (1998). *Qualitative research for education: An introduction to theory and methods* (3rd ed.). Boston: Allyn and Bacon.

Brandt, B. L., Farmer, J. A., & Buckmaster, A. (1993). Cognitive apprenticeship approach to helping adults learn. In D. D. Flannery (Ed.), *Applying cognitive learning theory to adult learning* (pp. 69-78). San Francisco: Jossey-Bass.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32-42.

153

Brown, J. S., & Duguid, P. (1991). Organizational learning and communities of practice: Toward a unified view of working, learning, and innovation. *Organization, 2*(1), 40-57.

Caffarella, R., & Merriam, S. B. (2000). Linking the individual learner to the context of adult learning. In A. L. Wilson & E. R. Hayes (Eds.), *Handbook of adult and continuing education* (pp. 55-70). San Francisco: Jossey-Bass.

Chang, C. K., Chen, G. D., & Ki, L. Y. (2008). Constructing a community of practice to improve coursework activity. *Computers and Education, 50*(1), 235-247.

Charon, J. (2001). *Symbolic Interactionism: An introduction, an interpretation, an integration* (7th ed.). Upper Saddler River, NJ: Prentice Hall.

Clark, D. N. (2000). *Cultures and customs of Korea*. Westport, CT: Greenwood Press.

Cody, M. J., Dunn, D., Hoppin, S., & Pamela, W. (1999). Silver surfers: Training and evaluating Internet use among older adult learners. *Communication Education, 48*(4), 269-286.

Cook, J. W. (2003). *Experiences of women over 70 years of age learning computer skills.* Montana State University, Bozeman, MT.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks: CA: Sage Publication.

Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (2nd ed.). Upper Saddle River, NJ: Pearson.

Crow, A. (2002). What's age got to do with it? Teaching older students in computer-aided classrooms. *Teaching English in the Two-Year College, 27*(4), 400-406.

Deaux, K. (2000). Identity. In A. E. Kazdin (Ed.), *Encyclopedia of psychology* (pp. 222-225). New York: Oxford University Press.

De Mente, B. L. (Ed.) (1999a) NTC's dictionary of Korean's business and cultural code words. Chicago: NTC.

De Mente, B. L. (Ed.) (1999b) NTC's dictionary of Korean's business and cultural code words. Chicago: NTC.

Dunnett, C. W. (1998). Senior citizens tackling technology. *Educational Media International, 35*(1), 9-12.

Dunning, T. (2005). Activities, aging and the Internet: Culture change. *Activities, Adaptation & Aging, 29*(3), 69-72.

Echt, K. V., Morrell, R. W., & Park, D. C. (1998). Effects of age and training formats on basic computer skill acquisition in older adults. *Educational Gerontology, 24*(1), 3-25.

Erikson, E. H. (1959). *Identity and the life cycle*. New York: Norton.

Erikson, E. H. (1963). *Childhood and society* (2nd ed.). New York: Norton.

Erikson, E. H. (1968a). Identity, Psychosocial. In D. L. Sills (Ed.), *International encyclopedia of the social sciences* (pp. 61-65). New York Macmillan.

Erikson, E. H. (1968b). *Identity: Youth and crisis*. New York: W. W. Norton.

Erikson, E. H. (1982). *The life cycle completed*. New York: Norton.

Erikson, E. H., Erikson, J. M., & Kivnick, H. Q. (1986). *Vital involvement in old age*. New York: Norton.

Esterberg, K. (2002). *Qualitative methods in social research*. Boston: McGraw Hill.

Evans, R. I. (1981). *Dialogue with Erik Erikson*. New York: Praeger.

Ezzy, D. (2002). *Qualitative analysis*. Crows Nest, Australia: Routledge.

Filipczak, B. (1998). Old dogs, new tricks. *Training, 35*(5), 57-58.

Van Fleet, C., & Antell, K. E. (2002). Creating cyberseniors: Older adults learning and its implications for computer training. *Public Libraries, 41*(3), 149-155.

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Greeno, J. G. (1997). Response: On claims that answers the wrong questions. *Educational Researcher, 26*(1), 5-17.

Greeno, J. G., Smith, D. R., & Moore, J. L. (1993). Transfer of situated learning. In D. K. Detterman & R. J. Sternberg (Eds.), *Transfer on trial: Intelligence, cognition, and instruction* (pp. 99-167). Norwood, NJ: Ablex.

Guy, T. C. (1999a). Culture as context for adult education: The need for culturally relevant adult education. In T. C. Guy (Ed.), *Providing culturally relevant adult education: A challenge for the twenty-first century* (pp. 5-18). San Francisco: Jossey-Bass.

Guy, T. C. (Ed.). (1999b). *Providing culturally relevant adult education: A challenge for the twenty-first century*. San Francisco: Jossey-Bass.

Hansman, C. A. (2001). Context-based adult learning. In S. B. Merriam (Ed.), *The new update on adult learning theory* (pp. 43-51). San Francisco: Jossey-Bass.

Hansman, C. A., & Wilson, A. L. (1998). Teaching writing in community college: A situated view of how adults learn. *Community College Review, 26*(1), 21-42.

Hansman, C. A., & Wilson, A. L. (2002). *Situating cognition: Knowledge and power in context.* Paper presented at the Adult Education Research Conference, Raleigh: North Carolina State University.

Harry, B., Sturges, K. M., & Klingner, J. K. (2005). Mapping the process: An exemplar of process and challenge in grounded theory analysis. *Educational Researcher, 34*(2), 3-13.

Hayes, E. R. (2006). *Situated learning in Virtual Worlds: The learning ecology of Second Life*. Paper presented at the 47th Annual Adult Education Research Conference, University of Minnesota.

Hilt, M. L., & Lipschultz, J. H. (2004). Elderly Americans and the Internet: E-mail, TV news, information and entertainment websites. *Educational Gerontology, 30*(1), 57-72.

Hollis-Sawyer, L. A., & Sterns, H. L. (1999). A novel goal-oriented approach for training older adult computer novices: Beyond the effects of individual-difference factors. *Educational Gerontology, 25*(7), 661-684.

Hooyman, N. R., & Kiyak, H. A. (2005). *Social gerontology: A multidisciplinary perspective* (7th ed.). Boston: Pearson.

Hoyer, W. J., & Roodin, P. A. (2003). *Adult development and aging* (5th ed.). Boston: McGraw Hill.

Illeris, K. (2006). *How we learn: Learning and non-learning in school and beyond* (2nd ed.). New York: Routledge.

Jones, B. D., & Bayen, U. J. (1998). Teaching older adults to use computers: recommendations based on cognitive aging research. *Educational Gerontology, 24*(7), 675-689.

Karavidas, M., Lim, N. K., & Katsikas, S. L. (2005). The effects of computers on older adult users. *Computers in Human Behavior, 21*(5), 697-711.

Kelley, C. L., Morrell, R. W., Park, D. C., & Mayhorn, C. B. (1999). Predictors of electronic bulletin board system use in older adults. *Educational Gerontology, 25*(1), 19-35.

Kirshner, D., & Whitson, J. A. (1997a). Preface. In D. Kirshner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic, and psychological perspectives* (pp. vii-ix). Hillsdale, NJ: Erlbaum.

Kirshner, D., & Whitson, J. A. (1997b). Editors' introduction to situated cognition: Social, semiotic, and psychological perspectives. In D. Kirshner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic, and psychological perspectives* (pp. 1-16). Hillsdale, NJ: Erlbaum.

Kee, Y. (2005). *Adult learning from a Confucian way of thinking.* Paper presented at the 46th Annual Adult Education Research Conference, University of Georgia.

Knowles, M. (1990). *The Adult learner: A neglected species* (4th ed.). Houston: Gulf.

Kroger, J. (2007). *Identity development* (2nd ed.). Thousand Oaks, CA: Sage.

Kubeck, J. E., Miller-Albrecht, S. A., & Murphy, M. D. (1999). Finding information on the World Wide Web: Exploring older adults' exploration. *Educational Gerontology, 25*(2), 167-183.

Lave, J. (1985). Introduction: Situationally specific practice (The social organization of knowledge and practice: A Symposium). *Anthropology and Education Quarterly, 16*(3), 171-176.

Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. New York: Cambridge University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

Lawhon, T., Ennis, D., & Lawhon, D. C. (1996). Senior adults and computers in the 1990s. *Educational Gerontology, 22*(2), 193-201.

Lawton, D. F. (2001). *Older Adults Eager To Explore Cyberspace.* Paper presented at the National Convention of the Association for Educational Communications and Technology, Atlanta, GA.

Lemke, J. (1997). Cognition, context, and learning: A social semiotic perspective. In D. Kirshner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic, and psychological perspectives* (pp. 37-56). Mahwah, NJ: Lawrence Erlbaum Associates.

Levinson, D. J. (1978). *The seasons of a man's life*. New York: Knopf.

Levinson, D. J. (1986). A concept of adult development. *American Psychologist, 41*(1), 3-13.

Liu, J. (2001). *Asian students' classroom communication patterns in U.S. universities: An emic perspective*. Westport, CT: Ablex.

Mann, W. C., Belchior, P., Tomita, M. R., & Kemp, B. J. (2005). Computer use by middle-aged and older adults with disabilities. *Technology & Disability, 17*(1), 1-9.

Marquie, J. C., Jourdan-Boddaert, L., & Huet, N. (2002). Do older adults underestimate their actual computer knowledge? *Behaviour & Information Technology, 21*(4), 273-280.

Mayhorn, C. B., Sronge, A. J., McLaughlin, A. C., & Rogers, W. A. (2004). Older adults, computer training, and the systems approach: A formula for success. *Educational Gerontology, 30*, 185-203.

McConatha, J. T., McConatha, D., Deaner, S., & Dermigny, R. (1995). A computer-based intervention for the education and therapy of institutionalized older adults. *Educational Gerontology, 21*(2), 129-138.

Mead, G. H. (1934). *Mind, self and society*. Chicago: University of Chicago.

Mead, S. E., Batsakes, P., Fisk, A. D., & Mykityshyn, A. (1999). Application of cognitive theory to training and design solutions for age-related computer use. *International Journal of Behavioral Development, 23*(3), 553-573.

Mead, S. E., Sit, R. A., Rogers, W. A., Jamieson, B. A., & Rousseau, G. K. (2000). Influences of general computer experience and age on library database search performance. *Behaviour & Information Technology, 19*(2), 107-123.

Merriam, S. B. (1990). Reminiscence and life review: The potential for educational intervention. In R. H. Sherron & D. B. Lumsden (Eds.), *Introduction to educational gerontology* (3rd ed., pp. 41-58). New York: Hemisphere.

Merriam, S. B. (1993). Taking Stock. In S. B. Merriam (Ed.), *An update on adult learning theory*. San Francisco: Jossey-Bass.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.

Merriam, S. B. (2002). Introduction to qualitative research. In S. B. Merriam (Ed.), *Qualitative research in practice: Examples for discussion and analysis* (pp. 3-17). San Francisco: Jossey-Bass.

Merriam, S. B., & Brockett, R. G. (1997). *The profession and practice of adult education*. San Francisco: Jossey-Bass.

Merriam, S. B., & Caffarella, R. S. (1999). *Learning in adulthood* (2nd ed.): San Francisco:
Jossey-Bass.

Merriam, S. B., Caffarella, R. S., & Baumgartner, L. (2007). *Learning in adulthood* (3rd ed.).
San Francisco: Jossey-Bass.

Merriam, S. B., Courtenay, B. C., & Baumgartner, L. M. (2003). On becoming a witch:
Learning in a marginalized community of practice. Adult Education Quarterly, 53(3),
170-188.

Merriam, S. B., & Simpson, E. L. (2000). *A guide to research for educators and trainers of
adults* (2nd ed.). Malabar, FL: Krieger Publishing Company.

Millar, P., & Falk, I. (2000). *Seniors online: Online literacy and learning by senior citizens in
rural centers. (ERIC Document Reproduction Service No. ED457399).*

Ministry of Information and Communication South Korea. (2006). *Report of current
statistic of Informational Technology*. Seoul, South Korea: Author.

Ministry of Information and Communication South Korea. (n.d.). Making worm digital
society. Retrieved September 21, 2006, from http://www.mic.go.kr/index.jsp

Moore, D., & Zabrucky, K. (1995). Adult age differences in comprehension and memory for
computer-displayed and printed text. *Educational Gerontology, 21*(2), 139-150.

Morrell, R. W., Park, D. C., Mayhorn, C. B., & Kelley, C. L. (2000). Effects of age and
instructions on teaching older adults to use ELDERCOMM, an electronic bulletin
board system. *Educational Gerontology, 26*(3), 221-235.

Morris, J. M. (1994). Computer training needs of older adults. *Educational Gerontology,
20*(6), 541-555.

Namazi, K. H., & McClintic, M. (2003). Computer use among elderly persons in long-term
care facilities. *Educational Gerontology, 29*, 535-550.

National Internet Development Agency of Korea. (2006). The analysis of the use of the
Internet of older population. Seoul, South Korea: Author.

Niewnlny, K., L., & Wilson, A. L. (2006). *(Re)Situating Cognition: Expanding sociocultural perspectives in adult education.* Paper presented at the 47th Annual Adult Education Research Conference, University of Minnesota.

Norris, P. (2001). *Digital Divide: Civic engagement, information poverty and the Internet Worldwide*. New York: Cambridge University Press.

Ogozaleck, V., & Others. (1994). Introducing elderly college students to multimedia: An intergenerational approach (Publication no. ERIC Document Reproduction Service No. ED396685).

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Pitri, E. (2004). Situated learning in a classroom community. *Art Education, 57*(6), 6-12.

Puacz, J. H., & Bradfield, C. (2000). Surf's up for seniors! Introducing older patrons to the Web. *Computers in Libraries, 20*(8), 50-53.

Redding, T. R., Eisenman, G., & Rugolo, J. (1998). Training in technology for late adopters: Learning in retirement, computers for seniors. *Journal of Instruction Delivery Systems, 12*(3), 19-24.

Richards, J. C. (2007). A community of practice summer literacy camp: One way to connect preservice teachers, graduate education majors, and elementary children. *Journal of Reading Education, 32*(2), 40-43.

Rogoff, B., & Lave, J. (Eds.). (1984). *Everyday cognition: Its development in social context*. Cambridge, MA: Harvard University Press.

Salthouse, T. A. (1996). The processing-speed theory of adult age differences in cognition. *Psychological Review, 103*(3), 403-428.

Salthouse, T. A., & Babcock, R. L. (1991). Decomposing adult age differences in working memory. *Developmental Psychology, 27*(5), 763-776.

Schaie, K. W. (1994). The course of adult intellectual development. *American Psychologist, 49*(4), 304-313.

Schaie, K. W., & Willis, S. L. (2002). *Adult development and aging* (5th ed.). Upper Saddle

River, NJ: Prentice Hall.

Schell, J. W. (1999). *Contextual teaching and learning in pre-service teacher education.*

Retrieved Feburuay 24th, 2007, from http://www.coe.uga.edu/ctl/theory.html

Schell, J. W. (2005). Theories of Situated Learning and Implications for Teaching.

Retrieved March 30th, 2007,

from http://www.coe.uga.edu/syllabus/eocs/EOCS_8040_schellj_su05.pdf

Segrist, K. (2004). Attitudes of older adults toward a computer training program. *Educational*

Gerontology, 30(7), 563-571.

Silver, C. (2001). Older surfers. *Canadian Social Trends, 63*, 9-12.

Smith, A. D. (2002). Memory. In D. J. Ekerdt (Ed.), *Encyclopedia of aging* (pp. 902-911).

Smith, M. (2003). Communities of practice. The encyclopedia of informal education.

Retrieved May 31, 2008, from www.infed.org/biblio/communities_of_practice.htm

Stephenson, M. (2002). Older learners and IT: Challenge for inclusion. *Adults Learning,*

13(7), 12-15.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Grounded theory procedures*

and techniques. Newbury Park, CA: Sage.

Stryker, S. (1980). *Symbolic interactionism: A social structural version*. Menlo Park, CA

Benjamin/Cummings

Swindell, R., & Vassella, K. (1999). Older learners online: An evaluation of Internet courses

for isolated older persons (Publication no. (ERIC Document Reproduction Service No.

ED431103)).

Tak, S. H., & Hong, S. H. (2005). Use of the Internet for health information by older adults

with arthritis. *Orthopaedic Nursing, 24*(2), 134-138.

Taylor, M. C., & Boulton, J. (2004). *Informal learning practices of adult with limited literacy skills.* Paper presented at the Joint International Conference of the 45th Adult Education Research Conference and the Canadian Association for the Study of Adult Education, Victoria, British Columbia, Canada.

Utley, B. L. (2006). Effects of situated learning on knowledge gain of instructional strategies by students in a graduate level course. *Teacher Education and Special Education, 29*(1), 69-82.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wang, H. (2006). Teaching Asian students online: What matters and why? *PAACE Journal of Lifelong Learning, 15.*

Wenger, E. (2000). Communities of practice and social learning system. *Organization, 7*(2), 225-246.

Wenger, E., & Snyder, W. M. (2000). Communities of practice: The organizational frontier. *Harvard Business Review, 78*(1), 139-145.

Whitbourne, S. K. (1996). *The aging individual: Physical and psychological perspectives.* New York: Springer.

Whitbourne, S. K. (2001). *Adult development and aging: Biopsychosocial perspectives.* Hoboken, NJ: John Wiley & Sons.

Whitbourne, S. K. (2002). *The aging individual: Physical and psychological perspectives* (2nd ed.). New York: Springer.

Whitbourne, S. K. (2006). Aging and identity: How women face later life transitions. In J. Worell & C. Goodheart (Eds.), *Handbook of girl's and women's psychological health.* New York: Oxford University Press.

Wilson, A. L. (1993). The promise of situated cognition. In S. B. Merriam (Ed.), *An update on adult learning* (pp. 71-79). San Francisco: Jossey-Bass.

Wolf, M. A. (1998). New approaches to the education of older adults. In J. C. Fisher & M. A. Wolf (Eds.), Using learning to meet the challenges of older adulthood (pp. 15-25). San Francisco: Jossey-Bass.

Woodruff-Pak, D. S. (1988). Intelligence and aging. In D. S. Woodruff-Pak (Ed.), *Psychology and aging* (pp. 310-342). Englewood Cliffs, NJ: Prentice Hall.

Wright, K. (2000). Computer-mediated social support, older adults, and coping. *Journal of Communication, 50*(3), 100-118.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, CA: Sage.

Appendix A

Regarding a social practice

- Tell me about a time when you learned form your classmates not from instructors?

- Tell me about a time when you taught a classmate something about computer skills?

- Tell me about a time when there was social interaction in the course.

- How did you interact with your classmates in your classroom?

- How did you interact with your instructor in your classroom?

- How do you feel about your relationships with other learners?

- Can you tell me formal or informal events that make you feel connected with instructors or other students?

Regarding situated activity

- Can you tell me a time when you had difficulties outside of classroom in using computer skills that you learned in class?

- Tell me classroom settings that prevent you from concentrating on learning. Can you give me an example?

- Tell me classroom settings that enable you to learn. Can you give me an example?

Regarding identity development

- What did you feel about yourself when you first joined the computer class?

- How do you feel about yourself now when you are in computer class?

- How do you feel about yourself when you are with other computer learners?

- How do you feel about yourself when you are in virtual world through the Internet?

- Tell me the differences about yourself inside the computer classroom and outside computer classroom.

- Could you tell me some changes in yourself as a result of taking a computer course?

- How do you feel about other people's reactions when they know you can use computers?