A REVIEW OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TRAINING FOR ELDERLY PEOPLE – TOWARD RECOMMENDATIONS FOR DEVELOPING COUNTRIES

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A REVIEW OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TRAINING FOR ELDERLY PEOPLE – TOWARD RECOMMENDATIONS FOR DEVELOPING COUNTRIES

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Abstract

Difficulties in using information and communication technologies (ICT) are blocking possibilities to improve the quality of life for many people in their advanced years. The difficulties are particularly acute in developing countries, some of which have rapidly aging populations. Training in ICT can help overcome these difficulties, but so far, experiences in provision of this training have been obtained mainly from developed countries. This paper reviews difficulties that elderly people have in using computers, and lessons learned on ICT training. Then, it discusses the possibilities of ICT training for developing countries. ICT training should focus on enhancing the communication abilities of the elderly, enabling them to search information online, and stimulating their hobbies and interests. While training organizations such as Universities of the Third Age, community information centers, ICT associations for seniors, and home teaching have been used, we argue that home teaching can have merit for elderly people ICT training in developing countries. This paper can help future empirical research to build comprehensive recommendations regarding developing countries.

Keywords: training, elderly, senior, developing countries
1 INTRODUCTION

The graying of populations worldwide is a trend that poses numerous challenges to healthcare and social security. While this trend has long been evident in developed countries, it is recently becoming prominent also in the developing and newly industrialized countries. Already from the 1980s, the number of elderly people in developing countries exceeded that of developed countries (Lloyd-Sherlock, 2000). Looking at the situation of China, it is forecast that the number of people over 60 years is expected to be 400 million by 2040, which represents 26 percent of the total population of China and is larger than the combined current populations of France, Germany, Italy, Japan and the United Kingdom (Zhang & Goza 2006). When the proportion of the elderly population becomes relatively high, excessive burden is put on the working populations to provide for the tax revenue to support the healthcare and social services that elderly people require. Thus, graying of populations represents an increasingly important issue for governments. Despite this, there is so far relatively little attention in research and policy regarding the elderly in developing and newly industrialized countries (Barrientos et al. 2003).

Changes in the society are contributing to the fact that many elderly people live relatively isolated lives after their retirement from active working life. They also live longer than ever and often many years after their spouse has passed away. These years of retirement can thus be a lonely and depressing experience for the elderly, who also need to combat several old age diseases and ailments. Information and communication technologies (ICT), such as computers and smartphones, offer several solutions for elderly people to improve their health and quality of life (Cotton et al. 2012, Karavidas et al. 2005, Salovaara et al. 2010, Wagner et al. 2010, Şar et al. 2012). For example, Pan and Jordan-Mash (2010) point out that early retirees in China who have difficulties to cope with leaving work can find friends and entertainment via the Internet that can help them adjust to the changes in their lifestyle. The provision of ICT to seniors can also reduce the economic cost of health care and associated services such as home-based care and improve welfare for the society (Falk & Kilpatrick 1999). Elderly people can significantly increase the range of their communication and access information from previously unavailable sources with help from ICT (Naumanen & Tukiainen 2008; 2009, Osman et al. 2005, Chaffin & Harlow 2005).

In contrast, ICT introduces challenges for senior citizens. Not only are the physical constraints of elderly people preventing them from familiarizing themselves with ICT, but they are also often slower at learning new technology. For example, ICT can pose a barrier for elderly people who wish to remain or return to working life through the requirement that all workers possess skills to use these tools. Updates might also incur additional requirements for skills that need to be acquired quickly. There is not often enough understanding in the ICT service provision side to provide more support to users with special needs, such as elderly people (Barrientos et al. 2003). If elderly persons’ accessibility to ICT would be supported, they could more easily overcome the learning challenges of ICT and benefit from the opportunities it affords. According to Kelley and Charness (1995), Naumanen and Tukiainen (2008) and Xie (2003), there are two perspectives to address the barriers of ICT technologies for elderly users: one is improving the usability of software and physical interfaces, and the other is the provision of age-appropriate training instructions and materials. The accessibility constraints posed by the physical limitations of elderly people can be addressed by designing appropriate interfaces and instructions which provide features to e.g. resize the font and change colors (Dickinson et al. 2005, Kim 2008, Milne 2003, Morrell 2000, Syne et al. 2003). The second perspective – training – is particularly important because ICT training focused on the elderly is needed whether or not it has been specifically designed for this user group in mind. This research addresses this second perspective, that is, provision of training to elderly people in the use of ICT.

Literature on the ICT training of elderly people is multi-disciplinary in nature; the fields of information systems, education, and gerontology are all involved. Prior research investigated how elderly people use ICT, their attitude toward ICT, the factors influencing their computer use processes, and what benefits they can expect to receive from ICT learning (e.g. Kim 2008; Wagner et al. 2010), but concentrated mainly on developed countries. How provision of ICT training for elderly people in
developing countries can be arranged will depend on how lessons from the developed countries can be utilized, but it also depends on the extent to which existing ICT courses can be adjusted for the elderly. Thus, this paper will review the difficulties for elderly people to use ICT, which can help understand what kind of special considerations ICT training for the elderly has to account for. It also reviews how ICT training has been provided for the elderly in prior literature, and what kinds of recommendations have been made regarding this training. Then, it discusses the applicability of these lessons and recommendations for developing countries.

In the next chapters, we describe the research methodology (chapter 2) and analyze the difficulties in training elderly people to use ICT (chapter 3). In the fourth chapter, we present the ICT training experiences for elderly people found from the previous studies, and in the fifth chapter, discuss how to apply them for developing countries. In the final chapter, we conclude the paper and present the limitations and further research opportunities.

2 METHODOLOGY

Web of Science, a professional database, was used in the literature review with the keywords:

- “information communication technology” OR “computer” OR “internet”, AND
- “education” OR “training”, AND
- “elderly” OR “old people”.

The research domain and area were “social research” and “education” respectively. As prior research indicates that most research on this topic has occurred after the year 1990 (Kim 2008), this study reviewed the literature that was published after the year 1990.

In total 176 papers indexed on search terms were identified and screened to include only articles that met the selection criteria: (1) focus on providing ICT training for seniors, (2) data content of training programs analyzed, (3) training recommendations presented, (4) paper written in English, and (5) articles electronically retrievable as full texts or available locally. Then, using a snowball/ancestry approach, the references from included studies were scrutinized for further relevant articles and conference proceedings. In addition, Google Search was used to find non-academic papers such as project reports or training programs on elderly people ICT training. As a result, 27 papers were retained for more detailed evaluation. Full texts of the papers finally selected were reviewed by one researcher and validated by another researcher. After screening the full papers, 8 papers were included in the review, with the addition of 8 papers from Google Search. Thus the total number of papers reviewed was 16.

The next chapter elaborates on the difficulties of the elderly in using ICT. The chapter following it describes the prior literature on elderly people ICT training.

3 DIFFICULTIES FOR ELDERLY PEOPLE TO LEARN ICT

Many of the previous studies (e.g. Chaffin & Harlow 2005, Czaja 1999, Dickinson et al. 2005, Jones & Bayen 1998, Mayhorn et al. 2004) suggest considering the limitations and disabilities that elderly people have to deal with when learning ICT. As this is crucial when designing ICT training courses, this section reviews the difficulties which have been most frequently referred to in the literature (e.g. Kelley & Charness 1995, Lee et al. 2011), that is, physical limitations, cost barriers, and low self-confidence.

3.1 Physical limitations

The physical barriers for elderly people to use and learn ICT have been confirmed by many studies. Old age brings with it sensory, physical and cognitive changes (Hawthorn 2000) that detract from abilities to engage with computers as younger people do. For instance, there are:


changes in perceptual abilities, e.g. worsening eyesight and inability to focus on objects that are very near (Mayhorn et al. 2004, Hawthorn 2000, Echt et al. 1998, Czaja & Lee 2007, Xie 2007) which complicates the process of seeing what is on the computer screen

significant problems in manual dexterity with using the mouse, e.g. feel using the mouse is time-consuming and frustrating, because of motor control difficulties (Dickinson et al. 2005, Echt et al. 1998, Hawthorn 2000, Xie 2007).

Lloyd-Sherlock (2000) reports that elderly people in countries such as India, Vietnam and Burkina Faso who are also poor tend to have greater need of treatment than average, but receive less treatment than average. The problem can be compounded when older people live in rural areas where the healthcare infrastructure is limited. In such circumstances the elderly could face even more serious disadvantages than suggested above regarding ICT use because of physical limitations. Therefore, ICT training courses would need to prepare for the possibility of having impaired participants come to training, and to provide these participants with robust accessibility gear to allow them to access ICT at all.

3.2 Low self-confidence

Elderly people tend to have low self-confidence in using new technology (Lee et al. 2011, Morris & Brading 2007), which partly stems from the physical limitations they have in using ICT (Osman et al. 2005). While addressing the above-mentioned cognitive and mobility-related issues can prove a remedy, special attention to the lack of self-confidence regarding ICT and generalized computer anxiety may be needed. One possibility would be to empower the elderly in troubleshooting situations (Carpenter & Buday 2007). Being strongly motivated to learn can improve the self-confidence of elderly learners, as can support from family members and friends (Chaffin & Harlow 2005; Kim 2008; Osman et al. 2005; Ng, 2007).

3.3 Financial constraints

While financial constrains is a factor in digital divide in general (Fuchs & Horak 2008, Warschauer 2003), lack of financing is also often mentioned as a barrier for elderly in adopting ICT (Steyaert 2006). This can be a serious barrier for learning to use ICT, because purchasing ICT gear is often a prerequisite for it. The study of Lee et al. (2011) found that the most recognized constraint experienced by senior users in terms of accessibility was the cost to own a computer or pay for Internet access. Many older people have small pensions and financial support from governments is scarce, so they cannot afford to pay for ICT products, training courses or learning resources and tools (Ala-Mutka et al. 2008; Osman et al. 2005). In developing countries, many elderly people are forced to live in poverty due to the lack of social security (Barrientos et al. 2003). Only a small proportion of elderly people in these countries can benefit from pensions and many have to continue working as long as they are able (Bloom et al. 2011). It seems that the elderly in developing countries suffer serious financial barriers for ICT use. While ICT rapidly tends to become more affordable as newer products are rolled out to the market, there is little motivation for the manufacturers to provide support for groups with special needs such as the elderly for these out-dated products. People who are unable to use the products intended for the average-income consumers can find themselves marginalized in terms of services provided.

The next chapter summarizes the results of the literature review on prior lessons regarding elderly people ICT training.
4 LESONS OF FACILITATING ICT TRAINING FOR ELDERLY PEOPLE

This chapter describes prior lessons from elderly people ICT training, starting with a table of prior training projects, moving on to discussing the training content that has been found useful in these courses and finally talking about the teaching organizations and teaching activities that have been tested. Table 1 summarizes the projects that have been applied in the past to promote the ICT learning of elderly people. Lessons learned on ICT training for elderly people (Table 1) are predominantly from the developed countries such as USA (5 projects) and UK (3 projects). Particularly, one big European project was conducted in several countries at once. The most utilized publication media has been the Educational Gerontology journal.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Publication</th>
<th>Country of data</th>
<th>Project size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echt et al.</td>
<td>1998</td>
<td>Educational Gerontology</td>
<td>USA</td>
<td>University project, 92 participants</td>
</tr>
<tr>
<td>Jones &amp; Bayen</td>
<td>1998</td>
<td>Educational Gerontology</td>
<td>N/A, conceptual paper</td>
<td>N/A, conceptual paper</td>
</tr>
<tr>
<td>Cody et al.</td>
<td>1999</td>
<td>Communication Education</td>
<td>USA</td>
<td>University Project, 292 participants</td>
</tr>
<tr>
<td>Mayhorn et al.</td>
<td>2004</td>
<td>Educational Gerontology</td>
<td>USA</td>
<td>University project, 9 participants</td>
</tr>
<tr>
<td>Trentin</td>
<td>2004</td>
<td>Journal of Computer Assisted Learning</td>
<td>Italy</td>
<td>Regional project, 600 participants</td>
</tr>
<tr>
<td>Chaffin &amp; Harlow</td>
<td>2005</td>
<td>Educational Gerontology</td>
<td>N/A, conceptual paper</td>
<td>N/A, conceptual paper</td>
</tr>
<tr>
<td>Dickinson et al.</td>
<td>2005</td>
<td>Universal Access Information Society</td>
<td>UK</td>
<td>Local project, 15 participants</td>
</tr>
<tr>
<td>Osman et al.</td>
<td>2005</td>
<td>Universal Access Information Society</td>
<td>UK</td>
<td>County project, 76 participants</td>
</tr>
<tr>
<td>Pevzner et al.</td>
<td>2005</td>
<td>AMIA 2005 Symposium Proceedings</td>
<td>USA</td>
<td>University project, 16 participants</td>
</tr>
<tr>
<td>Xie</td>
<td>2007</td>
<td>Educational Gerontology</td>
<td>China</td>
<td>City project, 1000 participants</td>
</tr>
<tr>
<td>Naumanen &amp; Tukiainen</td>
<td>2008</td>
<td>World conference on E-Learning in corporate, government, healthcare, &amp; higher education 2008</td>
<td>Finland</td>
<td>Local project, 15 participants</td>
</tr>
<tr>
<td>Naumanen &amp; Tukiainen</td>
<td>2009</td>
<td>39th ASEE/IEEE Frontiers in Education</td>
<td>Finland</td>
<td>Local project, 10 participants</td>
</tr>
<tr>
<td>Broady et al.</td>
<td>2010</td>
<td>British Journal of Educational Technology</td>
<td>N/A, conceptual paper</td>
<td>N/A, conceptual paper</td>
</tr>
<tr>
<td>Kokol &amp; Stiglic</td>
<td>2011</td>
<td>The 24th International Symposium on Computer-Based Medical Systems (CBMS 2011)</td>
<td>Slovenia, Ireland, UK, Austria</td>
<td>International project, 166 participants</td>
</tr>
<tr>
<td>Gonzalez et al.</td>
<td>2012</td>
<td>Educational Gerontology</td>
<td>Spain</td>
<td>Provincial project, 587 trainees</td>
</tr>
<tr>
<td>Czaja et al.</td>
<td>2013</td>
<td>Journal of AMIA</td>
<td>USA</td>
<td>University project, 61 participants</td>
</tr>
</tbody>
</table>

Table 1. List of articles reported on the ICT training for elderly people.

4.1 Teaching content

The main activities the elderly people engage in while using ICT are communication and social support, leisure and entertainment, information seeking about health and education, and productivity (Wagner et al. 2010). Thus, the teaching programs should focus on teaching ICT skills and knowledge which enhance their communication and information search skills and being active as explained in detail below.
4.1.1 Enhanced communication

According to Wagner et al. (2010) and Kim (2008), the main motivator for elderly people to use of computers and the Internet, and attend computer training is for social contacts and communication with family, is contact with grandchildren. In addition, communication needs stemming from coping with grief and limited mobility are reported to be important. These communication needs are satisfied with different types of online communication such as email, social media or internet telephony (such as Skype). For example, the online activity of elderly Australians was dominated by email or chat site use (77%) which was even higher than the chat activity of younger people (73%) (Boulton-Lewis et al. 2007). In the United States, elderly people considered email to be the most important computer application and reported daily usage of email to contact family and friends (Hilt & Lipschultz 2004). In Russia, an online service (“Family Ribbon”) was launched to provide elderly people –friendly usage of Skype, Facebook and online photo services. The software is targeted to the seniors among other groups. Teaching of communication applications should be a priority for elderly people ICT training courses.

4.1.2 Information search

Another benefit of ICT use for elderly people is information seeking. According to surveys in Europe and the United States (Sayago & Blat 2007), seniors often use ICT to access information on the Web. In particular, this information seeking takes place in the area of health and medical services and education (Wagner et al. 2010, Pan & Jordan-Marsh 2010). The desire to get new information e.g. on medication, weather, sports and genealogy was revealed in focus group interviews held in the United States (Saunders 2004). Researchers have also found that elderly ICT users tend to search information regarding their interests (e.g. weather, health, games, jokes, and entertainment), using search engines such as Google.com or Yahoo.com rather than following the mass media (Hilt & Lipschultz 2004). Sayago and Blat (2007) studied the effect of mouse use and clicking behavior on the online information strategies of the elderly. They found that by using the basic webpage search (i.e. Google basic search) elderly people could find complex online information three times faster than by advanced or directory search (i.e Google advanced search and the Yahoo! Directory) (Sayago & Blat 2007). ICT training programs should focus on familiarizing elderly people in the use of generic information search tools and the methods of selecting correct search words to find desired information.

4.1.3 Hobbies and interests

Training programs should show the elderly the potential of ICT from the point of view of their needs and interests to motivate them to learn (Aula 2004, Pan & Jordan-Marsh 2010, Naumanen & Tukiainen 2008, Wagner et al. 2010, Zajicek 2007). In other words, the training program should focus on delivering the benefits sought after by the elderly people themselves with respect to the topic of the program (Wagner et al. 2010) and emphasize the benefits in order to motivate the elderly people. This is of special consideration to elderly people because they no longer have job or education-related pressure to learn ICT tools. Thus, teaching should be strongly based on the current interests of these people.

Elderly people often use the Internet to pursue hobbies related to their offline interests such as genealogy (Jeger 2004, Wagner et al. 2010). According to the study of Hilt and Lipschultz (2004), elderly people in the United States were interested in online shopping and auctions. The reasons to use the Internet to further personal interests can also be dependent on the cultural background. In China, elderly generations have interest in using the Internet to learn new things because their formal education was interrupted in their youth by the Cultural Revolution. Many who could not finish the middle school or high school because of this phenomenon are interested in going back to study via the Internet (Pan & Jordan-Marsh 2010). On the other hand, recreational activities such as playing games can increase the cognitive performance of elderly people (Ordonez et al. 2011, Simpson et al. 2012) and thus contribute to their mental refreshment in everyday life. In this way, learning ICT can also be brought back to the emotional and psychological wellbeing and quality of life of the elderly people by
providing a chance for them to realize their personal dreams and goals. These hobby-related interests should be catered to in ICT training programs, perhaps by setting up clubs among the seniors with similar interests.

4.2 Teaching organizations and teaching methods

Teaching ICT for elderly people have been provided by different institutes e.g. community training centers, ICT associations for elderly people, Universities of the Third Age, seniors’ associations, peer volunteer networks (Lee et al. 2011)). Below, we give an overview of certain extant structures.

Community training centers offer adult education and general interest courses to the immediate local community, such as a town or a municipality. For example, in Sweden, adult learning centers are a space for all kinds of formal and informal learning (tutoring, guidance, stimulating learning environments, e-learning, technology support, etc.) and they are considered important for the training of elderly people (Ala-Mutka et al. 2008).

ICT associations for seniors can provide activities such as technical help, club activity (e.g. photo editing club), study tours and visits to organizations, and link other associations to provide library courses and other assistance. Prior literature describes such clubs in Finland and Hong Kong, where the elderly come together to familiarize themselves with ICT and learn new ways of interacting with ICT (Naumanen & Tukiainen 2008, 2009, Ng 2007).

The Universities of the Third Age in Europe, Australia and the United States are active in providing ICT training courses for elderly people (Yenerall, 2003; Swindell, 1993; Swindell and Thompson, 1995). Despite appearance of “university” in the name of these organizations, not all are necessarily aligned with actual universities. The Universities of the Third Age are associations of learners who recognize themselves to be in the “third age” of life which is situated after the second age of working life and parenthood.

Seniors’ associations bring together elderly people for different activities, not only ICT-related activities. For example, in Thailand, the Ministry of Public Health has been running elderly clubs from the year 1995 in 97% of the provincial sub-districts, and 64% of the total elderly population has a membership of these associations (Jitapunkul & Wivatvanit 2009). This network of clubs can help in arranging ICT training as well.

Specific teaching methods such as formal courses, informal group activities, peer teaching, home teaching, distance learning are linked to these teaching organizations. Elderly learners’ interest can also be fostered by combining the above teaching methods, by e.g. integrating informal learning with formal education offerings (Cruce et al. 2012). Therefore, the motivation of older adults to learn in more formal educational establishments can be improved by the collaboration with informal learning organizations.

Peer teaching has been seen as an effective method in creating special support for older people (Boulton-Lewis et al. 2007; Kim 2004; Naumanen & Tukiainen 2008, 2009, Xie 2007). The research of Eronen et al. (2006) demonstrates that peer teaching makes the elderly feel that they are more valuable members of society. The recipients of peer teaching are also satisfied and comfortable about receiving this support because communication between these elderly people is smooth (Xie 2007). In addition, they have been reported to instill significant learning motivation by personalized tutoring and tailoring of content according to individual needs, and to provide more effective continued training compared to short-term computer classes (Naumanen & Tukiainen 2008, 2009, Xie 2007). Several seniors’ associations such as ASCCA (the Australian Seniors’ Computers Clubs Association) and the Universities of the Third Age are already active in promoting a peer teaching model.

Home teaching is another option, especially for those who cannot join the clubs/universities because of their schedule or physical impairment, for example. Positive experiences of home teaching have been reported by Chaffin and Harlow (2005), Osman et al. (2005), and Nauman and Tukiainen (2008, 2009).
Distance learning can help solve certain limitations in mobility and finance for ICT training as it is cost effective (Pan et al. 2010). A website can be built as a knowledge base and material source for training programs. This website can also be a vehicle through which learners may continue online dialogues and consult with each other regarding various issues arising from the use of ICT. In the PRIMER-ICT portal, for example, various forms of communication can be supported such as e-mail, chat rooms, forums and blogs. The portal also includes a daily overview of news and events, with materials on healthy and active living, such as information on nutrition and ageing (Kokol & Stiglic 2011).

4.3 Training the trainers

Depending on the training organization and method adopted, the persons providing the ICT training for the elderly, that is trainers and educators, volunteers and peer tutors, and family members, would need training themselves to be able to succeed in providing relevant training. This training for the trainers is necessary for technical issues in using ICT as well as on teaching/coaching and tutoring in general. In addition, the persons providing the training would need to understand the specific requirements of older people in teaching these issues. For example, elderly Chinese in one study (Xie 2007) reported that the teaching style of young people did not match with their learning style. They said that the young people were “impatient” and not considerate enough to account for the competence of these elderly while based on cognitive ageing research Jones et al. (1998) and Tim et al. 2010 suggested that teachers should give the elderly people sufficient time to practice and master the learning content. Chapter three describes some issues that have to be taken into account when teaching the would-be-educators in these programs. The PRIMER-ICT project in the EU adopted a multi-stages teaching approach in training trainers by first teaching students primarily from health and ICT-related fields in training the elderly in ICT use. Then, these students taught other people such as community nurses, nurses in elderly homes, family members, and volunteers from different sectors and ages. These people from the second step then, in turn, taught the elderly (Kokol & Stiglic, 2011). The training programs should be designed to fulfill the specific needs of trainers with varied backgrounds.

5 TOWARD RECOMMENDATIONS FOR DEVELOPING COUNTRIES

Above, we argued that there are two ways to support elderly people to overcome their difficulties in using ICT: by developing easy-to-use technologies for them or by teaching them to use existing technologies. Elderly people in developing countries, however, are rarely the main target consumers for global ICT hardware and software developers. Thus, accessibility-enhanced technologies would be mainly designed abroad and imported to these countries. Moreover, from the perspective of these developers, the modification of new technologies exclusively for the elderly in developing countries with few financial resources might be unprofitable. Therefore, ICT education programs are recommended as a more cost-effective solution for elderly people in developing countries. Nevertheless, based on this review, it seems that while certain training programs of this kind have been implemented, these have taken place mainly in the developed countries, rather than the developing countries. Thus, with respect to elderly people ICT training as well, more government, private, and NGO efforts are necessary in developing countries.

Several of the training organizations and methods outlined in this paper can be appropriate for developing countries. In particular, a notable example from Thailand was the extensive network of Seniors’ Associations, which could also potentially support ICT training. However, many of these training organizations might need to be adjusted to fit the structure of society and traditional family relationships in developing countries. For example, the support of family and especially the younger generation in the ICT training of the elderly has been noted in prior studies (Chaffin & Harlow 2005, Karahasanovic et al. 2009, Kim 2008, Osman et al. 2005, Ng 2007, Nguyen et al. 2011). In Finland, all the participants of one computer course focused to seniors had been encouraged to attend the
course by their children or grandchildren (Naumanen & Tukiainen 2008, 2009). This family support can be expected to play an even stronger role in developing countries.

One way this is evident is the proximity between the elderly and the younger generations in societies. Many elderly people in developing countries live with or near their children, rather than in care institutions (Barrientos et al. 2003). If they do not have any children, they can be supported by their neighbours. Lloyd-Sherlock (2000) found that only 1% of Argentina’s elderly people of 60 years old or above were living in care institutions, and similarly, the Thai elders select “elderly people’s homes” as their last choice of residence (Jitapunkul & Wivatvanit 2009). Jiang (1994) and Gu (2004) report that over 60% of China’s rural elderly lived with their children in common households. In other words, elderly people in developing and newly industrialized countries are well connected with the community and the younger generations. In addition, there are policies/programs which attempt to promote proper care by the children, grandchildren and other family members to the elderly in Thailand and China (Jitapunkul & Wivatvanit 2009, Zhang & Goza 2006). It can be expected that these family conditions and policies can together create favourable conditions for teaching ICT at home in developing countries.

It is imperative the governments of developing countries recognize the importance of the ICT training for elderly people. It is not simply enough to create policies and allocate funds, it is also necessary to create the right capabilities on the ground which can foster efficient training. Therefore, giving correct training to the trainers who work with the elderly is needed. It is also desirable to increase scientific research on ICT education for elderly people in order to obtain high-quality data on e.g. the conditions and preferences of elderly people and the grassroots training efforts that are underway. Such data can be used to create recommendations for policies regarding the training programs. The challenges of training can have similarities between developing countries and between communities, and thus, sharing experiences can save resources.

6 CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

Prior literature on elderly people ICT training has provided a set of case experiences and recommendations. This literature review complements earlier work by collecting and organizing the lessons from these works. Recognizing that most prior research has focused on developed countries, and that increasingly, elderly people in developing countries also need support in ICT training as their compatriots in developed countries, this paper also discusses the applicability of these prior lessons for the elderly in developing countries.

This paper contributes to theory and practice by compiling prior knowledge on ICT training of elderly people in a format useful for researchers and e.g. government agencies and NGOs. We also discuss the implications of this prior knowledge for elderly people in the developing countries.

This paper was limited to examining prior literature on elderly people ICT training. Future research should attempt to update this information by collecting field data. Future research should also concentrate on obtaining more detailed understanding regarding the specific conditions and preferences of the elderly in developing countries as opposed to their compatriots in the developed countries. For example, the merit of various teaching organizations and methods, as described in this paper, should be tested and compared.

7 ACKNOWLEDGEMENTS

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