CHANGING ATTITUDES TOWARDS SENIORS AS LEARNERS. CREATING AN UNDERSTANDING OF SENIORS AS DIGITAL STORYTELLERS

H. Jaakola, M. Ekström, A. Guilland

Laurea University of Applied Sciences (FINLAND)

Abstract

Age experiences are constructed in the way we address a certain age-group. People easily self-stereotype and depersonalize themselves. “I am too old to learn” or “old dogs cannot learn new tricks”, are comments often heard in the context of technology in use.

One of the largest issues today is the reshaping of the population pyramids and the rapid proportional growth of the senior population especially in Japan and Finland. The ageing phenomenon is also interesting because of its role as a change agent in the society. The nature and meaning of being senior is changing. Cohorts approaching the somewhat stigmatized old age today do not fit the perception of previous generations. Future seniors are described to be healthier, better educated and more active, have more money to spend and be more open to digital technologies than the previous generations. The so called “baby boomers” are expected to have an important impact on the global economy. They can also be trailblazers in reshaping stereotypes and attitudes related to seniors as learners and users of digital technologies.

A promising trend reveals a change in the generational gap in technology use. While computers still remain the most used devices to access Internet among seniors, tablet computers have bridged the generational digital divide substantially. According to a global mobile consumer survey, adoption of tablet computers among people over 55 years has risen remarkably. Interestingly this same age group is the fastest growing demographic segment on social media sites.

This article is a part of an EU funded study called AHEAD that addresses seniors in five countries.

The article will elaborate upon the following issues: seniors as innovative technology users, social elements are essential in the learning process among seniors; creation of an experiential context encourages seniors to learn to use digital technology.

Keywords: seniors, stereotypes, ICT, experimental context, co-designing, training, social elements.

1 INTRODUCTION

One of the larger issues today is the reshaping of the population pyramids in an unforeseen manner. The proportion of the senior population is growing all over the world, even in developing countries. Also the amount of people over 80 years is estimated to double by year 2050. [1.] At the same time, the nature and meaning of being senior is changing. Cohorts approaching the somewhat stigmatized old age today do not fit the perception of previous generations. People over 60 years are described to be healthier, better educated and more active, have more money to spend and more open to digital technologies than the previous generations [2].

The ageing phenomenon is especially interesting because of its role as a change agent in the society. When discussing the societal ageing phenomenon the focus is in Finland mainly on the post-war age-groups. Finland had namely after the war, in yrs. 1945-1950, extremely high birth rates [3]. Hereafter this group will be referred to as “baby boomers” knowing that the concept is used for a different age group in e.g. the U.S.

“Baby boomers have radically transformed every stage of life through which they have travelled” [4]. Baby boomers can be seen as children of their time i.e. children of the cultural revolution in the 1960s (1958-1974) entailing new ways of looking at young age, beauty and authorities [5]. Ageing of the baby boomers will have an impact on the global economy but it will be of special interest to see what impact ageing will have on consumer culture and how the dialogue between marketers and elderly consumers will change the marketplace. It will also be interesting to see what the marketer-consumer dialectic in different consumption scapes will bring into the construction of the senior consumer’s identity and how it will be part of enhancing age and defying stereotypes.

The goal of this paper is to contribute to the scientific discussion on seniors as learners and bring elements to the debate concerning use and usefulness of technology by these customers. The focus is on mobile information and communication technology (ICT) devices, mainly tablets and smartphones. The paper presents a training concept developed together with seniors for teaching and learning to use tablets especially for promotion of sociability and sharing of experiences.

This article is a part of an EU funded project called AHEAD which addresses seniors in five countries. AHEAD was funded by EU Lifelong Learning Programme (LLP), Grundtvig. The aim of AHEAD was to promote socialisation among seniors. The statement of the project was to "train high tech seniors for discovery". The focus was on fostering active ageing of seniors and early retirees by enabling them to use digital technologies. To reach this goal a training concept and an app was developed to introduce seniors the possibilities in creating digital stories with mobile devices.

2 LITERATURE

2.1 Age stereotypes

One important process when meeting seniors is age stereotyping. Ageing is a biological phenomenon but can also be seen as socially constructed in the relationships between people. Appropriate "ageing behaviour" is certainly socially constructed where we act as we suppose that the environment wants us to act. Different age-norms tell us how to behave, how to look and how to present ourselves [6]. The ageing process can accelerate and can be a self-fulfilling prophecy. The memory capacity of seniors can increase when they are presented with the positive stereotype 'wise' as opposed to the negative stereotype 'senile' [7]. Stereotypes might cause barriers for seniors to adopt. If seniors think they cannot learn to use new technology because they belong to a stereotypical group of "technophobes", they might fall outside the digital world. Sometimes people may self-stereotype in order to protect themselves. Stereotypes can be used for keeping a status quo for example when one is unsure about what the use of technology could mean in the daily life (cf with the "psychological functions of self-stereotyping") [8].

Stereotypes can be seen as mental shorthand that helps to save cognitive resources [9]. Stereotypes are considered "abstract knowledge structures linking a social group to a set of traits or behavioural characteristics" [10]. Important and suitable for the context of this study is that stereotypes serve both social and cognitive functions [11]. Stereotypes can also be used to create social identity [12], inform about social reality [13] and justify existing social orders [14].

Stereotypes can affect how we treat others especially if we do not have enough time for making our own judgments. The relationship between category-based impressions or stereotyping and information about an individual, can been seen as linear; the more information the less stereotyping and the other way around [15].

With our paper we aim to show that educational gerontology and technology-based services created with seniors need to address the possible stereotyping processes. Stereotyping, as a concept, has a negative ring because of its appearance in the context of prejudice and discrimination [16]. Stereotyping usually has a purpose as it aims at "protecting the value system which underlies the division of the surrounding world" [17]. This knowledge "guides the processing of information about the group" [10]. What is especially interesting in the sometimes categorizing view of stereotyping, is that some researchers have considered affect to be part of stereotyping processes [e.g.18]. Affect is treated apart from the more theoretical cognitive view of stereotyping. To include affect and emotions as important in the stereotyping process could be workable in the learning context, because research suggests that seniors have more emotional ways to look at reality [19]. Shiffman & Sherman [20] have made an important comparison of new-age seniors and so-called traditional stereotypical seniors. Characteristics as selective innovativeness, thorough knowledge, and financial security are typical for the new-age consumer who feels thinks and "does" younger. The opposite view is still going strong and can be classified as stereotypes, though some transition can be experienced. Another example of the opposite to the usual age stereotype is that some studies have shown that people over 55 years are more probable to use internet to purchase books for example than other adults [21].

2.2 Seniors as technology users

Over half of Americans over 65+ are connected to internet [22]. Computers remain the most used devices to access Internet by seniors, even though mobile devices have bridged the generational digital divide substantially. Especially tablets, have their advantages because they are portable and easier to use than desktop computers [23]. These hand-held devices allow a constant access to information, navigating, being connected or capturing and sharing experiences in a digital format.

According to a global mobile consumer survey, adoption of tablets among people over 55 years has risen steadily. Interestingly this same age group is the fastest growing demographic segment on social media sites. However, they don't always fully exploit the possibilities of their mobile devices. According to a Finnish study, one third of Finns over 55 years have never uploaded an application for their mobile device. [24.] Although the penetration of mobile devices seems promising, there might be a lot to catch up by seniors in the actual usage of these devices. Especially seniors don't fully exploit the possibilities of their mobile devices even though, the majority considers the services offered by the apps good and interesting. In Finland, a third of seniors (55+) have never uploaded an application for their mobile device. At the same time a half of these Finns have not used internet with their smartphones [24].

A digital divide exists between younger and older generations in many countries. This divide does not only exist between the younger and older generations but also among the seniors; the age of 75 years seems often to set a boundary [26]. The adoption of digital communication seems to continue especially among younger (< 75 years), higher-income, and more highly educated seniors [27]. Fear of digital devices (technophobia) is as common among women and men [28]. Many seniors are interested in using new technologies such as tablets and smartphones, but they need advice in purchasing, utilizing, and troubleshooting the new devices [22].

Younger seniors (<75 yrs.), such as the Finnish baby boomers, have more likely embraced new technology probably during work life [23]. Over time the generational divide is only going to narrow faster and faster when more and more people belonging to the baby boom generation reach their third life stage. In the end, also the younger generations, born and raised in the digital world, will get older. Senior technophobes might soon become an extinct species.

The discussion of, how big the generational divide or how many percentages use different devices or applications inside the devices does not provide deeper understanding and solutions to bridge the divide. Therefore, it is more fruitful to focus on the factors affecting this divide: what are the obstacles and motivations of using and adopting ICT by seniors. Some studies suggest that use of digital technology among seniors is often related to their other interests or hobbies and to sharing their thoughts and experiences using email [26]. Seniors are interested in adopting technologies that they perceive as practical and useful [27]. The famous model of technology acceptance (TAM) emphasizes that perceived usefulness and perceived ease-of-use are the main predictors for the technology adoption by both current users and nonusers of the technology. When social networking sites are taken into account trust is added to the list [28]. The simplicity and ease of use in new technologies is not enough alone. The influence of socialization agents is important in the life of seniors. Support and encouragement from so called "warm experts" or "circles of people" with technology literacy are important. Younger family members are often gatekeepers of new technology. Social norms and social relationships such as social pressure from family influence the adoption positively [29][30].

Although social elements are important in the adoption process of ICT, controversy and negative attitudes toward social networking sites exist among seniors, especially towards Facebook. Social networking tools are seen mainly as communication tools for distant locations [31]. When seniors get aware, build trust and start using social media their attitudes change rapidly [32]. Social networking can offer major benefits for seniors. Actually young seniors (<75yrs) are the fastest growing demographic segment on social media sites in America [33]. They are mostly interested in communicating and sharing things with people with whom they are connected also outside internet. Even co-creation of narratives with other users can interest seniors though mainly when the narratives are connected to real, offline social relations, common history and collective memory [34].

2.3 Seniors as learners

The baby boomer generation reaching their senior age is likely to promote a positive change in ICT adoption and use even though sociocultural changes in the everyday lives of seniors take more time [35]. However, teachers and trainers should focus on identifying innovative ways to address the attitudes and beliefs of seniors and facilitate learning and self-efficacy. The potential anxiety towards learning new technologies should be kept in mind and the relevance of the technology in the life of the seniors and the easiness of use should be emphasized [23].

A previous EU project called ICT4T indicated elements such as self-guided learning, participatory course design and reflection activities successful in teaching seniors. Self-guided learning means that that the course structures are flexible and allow seniors to set their own goals and timetable. Participatory course design means that the course is designed together with the participants to enable full appreciation of their needs and expectations. Through reflection activities the participants build profound understanding of the issue. [36.]

Before introducing the different functions of social media, the overall concepts should be defined and presented in a comprehensive way by using terminology and metaphors seniors already know. It is important to respond and reflect the concerns seniors have about trust and privacy issues. Again, social media feel should be made personally relevant and valuable [37].

3 STUDY

The aim of this action research was to promote changes in attitudes and behaviours among seniors towards mobile devices and the use of apps. Seniors were studied by interviewing and creation of personas. On this basis a training course that introduces mobile technologies in the context of creating digital travel stories was co-designed, further developed and tested with the seniors in Finland.

3.1 Interviews

One-to-one semi-structured interviews were carried out in autumn 2014 in Helsinki Metropolitan Area. The goal was to provide an in-depth understanding of seniors' individual and contextual needs in designing a pilot course that introduces mobile technologies in the context of creating digital travel stories. The interviews focused on understanding the ways seniors capture, store and share their travel experiences. In addition, interviews touched upon the roles travelling, information technology (ICT) and social networking services (SNS) had in the person's life. Nature of the interviews was conversational and open, which encouraged the participants to share and reflect their experiences freely. Participants were encouraged to share stories of their past experiences about travelling and usage of ICT.

A total of 15 interviews were conducted during which 17 individuals aged between 59-73 years were interviewed. Average age of the participants was 63,5 years. 14 of the participants were women and three men. Three interviewers conducted the interviews face-to-face either in participant's' home or in public space such as library or cafe. Duration of interviews ranged between 30 minutes and 75 minutes.

The interviews were recorded, transcribed and analysed to find common themes and patterns in seniors' life situations, beliefs, attitudes and behaviours. Each interviewee was also placed on an insight poster that contained most relevant information and a photo resembling the person. This helped to easily reflect on the interview data.

3.2 Creation of personas

Creation of personas was chosen as a method to synthesize and communicate the understanding gained from the interviews. This methodological tool stems from the field of information design. It can offer a rich and approachable insight into the typical users. Personas are fictional archetypes representing the target users of the designed service. Personas "smooth out the idiosyncrasies of real individual people while retaining the patterns of needs and behaviours in the target market. At the same time, a persona retains enough human detail to feel like a real person." [38.] Although personas are fictional presentations of users, they are based on real needs, frustrations and motivations. Data forms the skeleton of the persona, whereas storytelling makes it look and feel more real. Personas help to build empathy towards the users in a more emotional and social level than statistical

segmentation would [39]. Personas are also an effective way to communicate the users' perspectives among different stakeholders.

In this study, personas were first created from interview data to synthesize and communicate the findings in an emphatic way. The created personas served as reference points throughout the process of designing and iterating the training concept based on characteristics and needs of the actual participants. After the piloting activities the personas were iterated to fit with the full understanding of the seniors even though, the personas actually didn't need to be changed very much.

3.3 Co-designing and piloting a training course

Three pilot courses were organized to co-develop and test the training concept. The training took place at Laurea University of Applied Sciences, Finland between January and April 2015. The course activities progressed from basic functions of a tablet computer to creating digital stories with a mobile app. Each course consisted of 12-15 hours of training and each session lasted three to four hours. Sessions were held once a week over the course of three consecutive weeks. Two trainers facilitated the sessions with the help of three young student assistants. Altogether 50 seniors aged between 61-85 years took part in the training activities. The number of participants in each session ranged from 11 to 19. Every senior took part in at least in two sessions. The majority of the participants (38) were women. Nearly half (22) of the participants had their own tablet, the rest of them used the tablet provided at the course. All, except one participant, had basic computer skills such as using internet and email.

Information on the learners and their learning process was gathered through discussions, interviews and observation as well as through written feedback. Throughout the course participants were encouraged to ask questions, share their experiences, give feedback and make propositions concerning the content of the training sessions.

4 KEY FINDINGS

4.1 Personas

Initially three personas were created, but only two of them are presented in this paper: Soile "the social experiencer" and Reetta ("the reflective experiencer) (see table 1). The typical denominator of the two personas presented was the somewhat low level of self-efficacy toward learning new technology. What differentiated the participants, from the perspective of developing a training concept, was their approach towards this low self-efficacy and learning. Soile presents learners whose self-concept… Reetta, on the other hand, believes more on her own abilities to learn, but she needs inspiration. Also the needs of social aspects for the training differed. Part of the participants gained valued and embraced more sharing their learnings with others (Soile persona). Others focused more on the technology itself, wanting guidance only in the beginning (Reetta persona).

The third persona, excluded from this paper, represented a less common type of senior whose skills already has a high level of skills in using tablets and high self-confidence related to ICT. This persona was excluded from the following description because of the need to focus the article to the users who struggle most with learning ICT and thereby would be more likely to participate in courses teaching basics of tablets.

Educational professionals can use the personas as inspiration and reference when developing adult education courses on ICT. Personas can help to engage with the potential users and thereby to develop motivating and inspiring learning experiences with ICT.

Soile – social experiencer

"I doubt if I would really learn to control the device – it has a will on its own"

Soile is a retired kindergarten teacher who has an active, open and friendly personality. She has a large social network. She loves to spend her time with her grandchildren. Soile is also dedicated to running a senior association.

ICT use
Soile has some computer skills (internet and email). She uses her new smartphone only for calling, texting and taking photos. When her sister got a smartphone, she got confidence to learn to use one. She has also been pressured to be on Facebook, but she doesn't know its functions. She dreams about making a printed photo book from the hundreds of photos she has captured over the years, but she thinks its too hard.

ICT learning
Soile underestimates her own ICT-skills. She gets easily frustrated with technology, which evokes anxiety. Her children are her "personal IT-support persons". She asks for help instead of trying to figure out the problems by herself. Sometimes she feels that she bothers others too much.

Reetta – reflective experiencer

"I would like to keep up to date, but I don't know where to start. Things have changed so much – so fast"

Reetta is an independent and thoughtful entrepreneur moving toward the life stage of retirement. She is getting used to her new life with less time dedicated to work life and family obligations. She plans to travel to exotic places.

ICT use
Reetta knows how to use basic computer programs. Reetta is interested in buying an own tablet, but she is not sure which one to buy. She got interested when she noticed that even her two year old grandchild knows how to use one. Reetta is against sharing her life in Facebook., but she dreams about preserving her travel experiences for future in a digital way.

ICT learning
When learning new technology, Reetta wants to try things herself. She wants to understand the logic how things work. She is embarrassed that she has not kept up with the digital change. She does not have people close to introduce her new technology.

Table1: Typical senior learners presented as personas.

4.2 Training concept

The content and execution of the training concept was co-developed together with the seniors. The first challenge was to find a way to help people with little or no previous experience of mobile devices to participate in designing a training concept. A generative design framework inspired this approach. It consisted of the following elements: 1) immersion into current experiences, 2) activation of feelings and memories, 3) dreaming of the future, 4) generating and expressing new ideas related to the future experiences [40]. Learning objectives for each session were limited to three. The activities progressed from basic functions of a tablet computer to creating digital stories with a mobile app.

The course started with an inspirational workshop, where motivation and interest were evoked to help to lower the threshold of approaching new technology. Participants were asked to reflect and share their current challenges and motivations in capturing and sharing travel or life experiences in general. After this the participants were presented the evolution of capturing, storing and sharing travel experiences all the way from the physical photos, albums and post cards to the digital era. The presented photos were chosen on the basis of the insights gained from the interviews. Many of the digital era photos were unfamiliar but relevant digital solutions. The purpose of this "time travel" exercise was to activate feelings and memories from the past [19], point out familiar things as well as to inspire to think of all the possibilities. These exercises helped the participants to express their wants and needs as well as to generate new ideas on how sharing their experiences. It turned out to be important that the focus was turned on tablets only after this introduction.

The course outline was presented metaphorically as a journey to discovering the possibilities of tablets. Travelling provided a relevant and inspiring context for learning how to use tablets.

The course concentrated on the ways tablets can help the seniors. Learning objectives were formed from the insights gained from interviews and the warming up workshops. Activities were chosen that would be important and inspiring for the seniors in the context of travelling such as preparing for a trip by packing a digital suitcase, capturing moments during a trip, creating audio-visual stories. Technical facts and terms were excluded unless they were asked about. The following applications were

introduced: Google maps, Google translate, weather apps, photo editor apps, photo show generators. Participants were also introduces several ways of sharing experiences.

In the beginning of every session at least 30 minutes were allocated for reflecting the homework and possible challenges the participants had faced. This helped to reinforce the skills and address problems early on. Everyone sharing their experiences built rapport among the group and showed that others had similar kind of challenges.

Interactive and highly visual PowerPoint presentations were used to inspire and introduce the concepts, functions and benefits of the tasks. Videos like the evolution of the desk or examples of digital stories were used for explaining the changes that have happened. Technology and unfamiliar terms were introduced with familiar metaphors from the past (e.g. choosing a Wi-Fi connection reminded choosing a radio station). The benefits of the applications were always stated explicitly and discussed with participants. Creating a wow effect about the possibilities of mobile devices was also a successful strategy to keep participants motivated (e.g. screenshot, voice search, navigation, geolocation).

After the first pilot course it came very evident that seniors needed more time and guidance in understanding the logic of basic functionalities of a tablet. Thus, a document camera was taken into use. It enabled to show all the participants simultaneously the basic logic of specific tasks on the tablet which the participants appreciated very much.

A central issue of the learning tasks was to encourage trying out things alone, with a pair or in small groups. Participants were actually encouraged to “get lost in the device”. Adopting a trial and error learning approach was first hard for some participants, but later on it became easier; as one participant stated, “trying out is the only way to learn these days when things change so fast”. The trainers and assistants were constantly available for helping with various issues and challenges. Participants were encouraged to ask questions throughout the sessions. This personalized help the participants considered very valuable.

Between sessions participants were assigned small tasks as homework to deepen the key learnings. This helped in overcoming perceptions such as: “I can do it here, but I doubt if I can do it when I get back home”. It was even encouraged to “mess up the device” for the next session. When participants then realized it is really hard to mess up the device, they got more confidence in trying new things on their own. The homework the participants liked most was the one where they were asked to take photos for a digital story. During the last session the participants were assisted in creation of an audio-visual slideshow for sharing their story. Learning to express one’s self digitally raised self-confidence.

Peer-to-peer support was very important for the learning experience. One of the participants expressed it in the following way: “I always thought that when it comes to learning to use these technical things I’m somehow stupid. It was motivating to realize that I’m not the only one who has problems with these devices; others have the similar problems. I got relieved and more self-confident”. The training concept evolved to meet the needs and wants of seniors. Time, patience and clear structure were main development areas when iterating the concept.

5 DISCUSSION

The study reinforced our understanding that seniors are an interesting target group for training ICT [34]. Seniors should be considered as active users of the services that tablets can enable, instead of passive recipients [2] [7] [15] [20] [21]. Training can help seniors to integrate new technology to their life in new and often even unexpected ways [35]. However, new innovative approaches for encouraging seniors to learn to use and fully exploit the wide range of possibilities of tablets are needed [36].

The chosen context of travelling turned out to be motivating. Practices related to preparing for a trip, capturing moments during the trip, compiling stories and sharing them were considered inspiring. The participants became interested in various apps and found them relevant and useful. Raising interest towards the tablets enabled to lower barriers and reinforced self-efficacy.

Half of the participants joined the training because they were interested in buying a tablet but were still hesitating. Those who already had their own tablet joined the training because they had difficulties in using the tablet and used them in limited ways. The apps on their devices were scarce, mainly installed at delivery or by a family member. Low self-efficacy towards problem solving seemed to lead

to feelings of insecurity and helplessness. Confronting problems with the device ended easily at giving up.

The persona design method [39] [40] helped to avoid stereotyping seniors and to reflect on most relevant learning objectives. The generative design approach [41] proved to be useful in co-designing the course. The participants were encouraged to articulate their needs and challenges in learning to use ICT.

The course did not start with the features of the devices but by listening to the current needs of the participants in completing relevant tasks. Referring to the past in the analogical world enabled to bind learning to previous experiences and practices and to make the change explicit and familiarize new things. Surprising the participants by presenting various possibilities offered by the apps (e.g. voice search, navigation with maps, photo geolocation and photo collages) evoked curiosity and inspired the participants. Introducing various ways of sharing photos and stories interested the participants. Sharing experiences with others and understanding mutual problems in adopting digital communication and using the devices motivated the learners. Peer-to-peer learning promoted overcoming various challenges, diminishing self-criticism and reinforcing self-efficacy.

To conclude, taking an iterative and participatory approach turned out to be important for to designing a training concept. The experimental culture promoted common understanding between the trainers and the learners and changed their attitudes towards seniors as digital storytellers. The piloted training concept could be applied further in more informal learning contexts such as a real trip.

REFERENCES

[1] United Nations. World Population Ageing 1950-2050, Population Division. http://www.un.org/esa/population/publications/worldageing19502050/

[2] Czaja, S. J. & Sharit J. (2009). The Aging of the Population: Opportunities and Challenges for Human Factors Engineering. Accessed 12.1.2015. https://www.nae.edu/Publications/Bridge/TechnologiesforanAgingPopulation/TheAgingofthePopulation.aspx

[3] Karisto, A. (2005). Suuret ikäluokat kuvastimessa. In Karisto, A. (Ed.) Suuret ikäluokat. Tampere: Vastapaino, pp. 17-58.

[4] Dychtwald, K. (1999). Age power: How the 21st century will be ruled by the new old. New York: Jeremy P. Tarcher/Putnam.

[5] Marwick, A. (1998). The Sixties. Oxford: Oxford University Press.

[6] Atchley, R.C. (2000). Social forces and aging. An introduction to social gerontology. Belmont: Wadsworth Thomson Learning.

[7] Levy, B. R. (1996). Improving memory in old age through implicit self-stereotyping. Journal of Personality and Social Psychology 71, pp. 1092-1107.

[8] Bell, A. C. & Burkley, M. (2014). “Women Like Me Are Bad at Math”: The Psychological Functions of Negative Self? Stereotyping. Social and Personality Psychology Compass 8(12), pp. 708-720.

[9] Monteith, M. J., & Spicer, C. V. (2000). Contents and correlates of Whites' and Blacks' racial attitudes. Journal of Experimental Social Psychology 36, pp. 125-154.

[10] Hamilton, D.l. & Sherman, J.W. (1994). Stereotypes. In Wyer, R.S. & Srull, T.K. (Eds). Handbook of Social Cognition (2nd Edition). Hillsdale, New Jersey: Erlbaum. Vol. 2. pp.1-68.

[11] Spears,R., Oakes, P.J., Ellemers, N. & Haslam, S.A.(1997). The Social Psychology of Stereotyping and Group Life. Blackwell Publishers Ltd.

[12] Ellemers, N. & van Knippenberg, A. (1997). Stereotyping in Social context. In Russell, S., Oakes, P.J., Ellemers, N. & Haslam, S.A.(1997). The Social Psychology of Stereotyping and Group Life. Blackwell Publishers Ltd. pp. 208-235.

[13] Oakes, P.J., Haslam, S.A. & Turner, J.C. (1994). Stereotyping and Social Reality. Oxford : Blackwell

[14] Jost, J.T. & Banaji, M.R. (1994).The role of stereotyping in system-justification and the production of false consciousness. British journal of Social Psychology 33, pp. 1-27.

[15] Macrae, C.N., Milne, A.B. & Bodenhausen, G.V. (1994). Stereotypes as energy-saving devices: A peek inside the cognitive toolbox. Journal of personality and Social Psychology 66, pp. 37-47.

[16] Katz, D. & Braly, K. (1933). Racial stereotypes of one hundred college students. Journal of Abnormal and Social Psychology 28, pp. 280-290.

[17] Tajfel, H. & Forgas,J.P. (1981). Social categorization: Cognitions, values and groups. In Forgas, J.P (Ed.). Social Cognition: Perspectives in everyday understanding. London: Academic Press. p. 118.

[18] Mackie, D. M., & Hamilton, D. L. (1993). Affect, cognition, and stereotyping: Concluding comments. Affect, cognition, and stereotyping: Interactive processes in group perception. California: Academic Press. pp. 371-383.

[19] Wolfe, D. (1997). Older Markets and The New Marketing Paradigm. Journal of Consumer Marketing 14(4), pp. pp. 294 – 302.

[20] Shiffman, L.G. & Sherman,E. (1991). The Value Orientation of New-Age Elderly: The Coming of an Ageless Market. Journal of Business Research 22(April), pp.187-194.

[21] Szmigin, I. & Carrigan, M. (2001). Leisure and Tourism Services and the Older Innovator. The Services Industries Journal (London) 21(3), pp. 113-129.

[22] Zickuhr, K. & Madden, M. (2012). Older adults and internet use. Washington, DC: Pew Internet & American Life Project. Accessed 15.2.2015. http://www.pewinternet.org/files/old-media/Files/Reports/2012/PIP_Older_adults_and_internet_use.pdf.

[23] Ericsson consumerlab. (2014). Connecting the senior generation. Accessed 29.12.2014. http://www.ericsson.com/res/docs/2014/consumerlab/connecting-the-senior-generation.pdf

[24] Deloitte. (2013). The state of the global mobile consumer 2013. Divergence deepens. Accessed 12.1.2015. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Technology-Media-Telecommunications/dttl_TMT-GMCS_January%202014.pdf

[25] Smith, A. (2014). Older Adults and Technology Use. PEW Research Center. Accessed 17.4.2015. http://www.pewinternet.org/2014/04/03/older-adults-and-technology-use/.

[26] Hogan, M. (2006). Technophobia Amongst Older Adults in Ireland. The Irish Journal of Management 27(1), pp. 57-77.

[27] Huber, L. & Watson, C. (2014). Technology: Education and Training Needs of Older Adults. Educational Gerontology 40(1), pp. 16-25.

[28] Braun, M. (2013). Obstacles to social networking website use among older adults. Computers in Human Behavior 29 (3), pp. 673-680.

[29] Mathur, A. (1999). Adoption of technological innovations by the elderly: A consumer socialization perspective. The Journal of Marketing Management 9(3), pp. 21-35.

[30] Venkatesh, V. & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science 46 (2), pp. 186-204.

[31] Kälviäinen, M. & Morelli, N. (2013). Developing services to support elderly everyday interaction. In Miettinen, S. (Ed.) Service Design with Theory: Discussions on Change, Value and Methods. Lapland University Press. p. 42.

[32] Gatto, S.L. & Tak, S.T. (2008). Computer, Internet and e-mail use among older adults: Benefits and barriers. Educational Gerontology 34, pp. 800-811.

[33] Zickuhr, K. (2010). Generations 2010. Pew Research Center. Assessed 15.12.2014. http://www.pewinternet.org/2010/12/16/generations-2010/

[34] Karahasanović, A., Brandtzæg, P. B., Heim, J., Lüders, M., Vermeir, L., Pierson, J., Lievens, B., Vanattenhoven,J. & Jans, G. (2009). Co-creation and user-generated content-elderly people's user requirements. Computers in Human Behavior 25 (3), pp. 655-678.

[35] Vroman, K, Arthanat, S. & Lysack, C. (2015). "Who over 65 is online?" Older adults' dispositions toward information communication technology. Computers in Human Behavior 43, pp. 156-166.

[36] Kearney, N. (2007). Pedagogical Model for the ICT4T course including a draft course structure. Internal Project Document. Source: Technologies and Practices for Constructing Knowledge in Online Environments: Advancements in Learning, Ed. Bernhard Ertl. Chapter 2: Helling,K. & Petter, C. Collaborative Knowledge Construction in Virtual Learning Environments: A Good Practice Example of Designing Online Courses in Moodle, p. 25-46.

[37] Xie, B., Watkins, I., Golbeck, J. & Huang, M. (2012). Understanding and Changing Older Adults' Perceptions and Learning of Social Media. Educational gerontology 38 (4), pp. 282-296.

[38] Cooper, A. (2004). The Inmates Are Running the Asylum: Why High Tech Products Drive Us Crazy and How to Restore the Sanity. USA: Sams Publishing. p.6.

[39] Goodwin, K. (2009). Designing for the Digital Age: How to Create Human-Centered Products and Services. Indianapolis: Wiley Publishing, Inc. p. 229.

[40] Sanders, E.B-N. & Stappers, P.J. (2013). Convivial Toolbox: generative design research for the fuzzy front end. BIS Publishers, Amsterdam.