



e-inclusion
in ageing
Europe

Grandma on the web e-inclusion for elderly people

The Norwegian pilot in iAge

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1 Introduction

Information and communication technologies (ICTs) play an important role in people's lives, being a central part in a wide range of aspects such as entertainment, communication, social interaction, health and wellbeing. All these aspects contribute to independent living, for which access to relevant information becomes crucial. ICT is becoming more necessary as an instrument for participation in the community where access to services, such as banking or public information, often relies on the use of technology.

According to the Europe 2020 initiative Digital Agenda Europe (DAE), it is necessary to increase ICT use to be an active participant in the society in the future. Hence, empowering citizen's digital competence is one of the prioritized initiatives in the Europe 2020 strategy (EU, About our goals, 2014). In Norway, a high percentage of the inhabitants use the Internet, with 93% using it regularly (EU, Digital Agenda Scoreboard, 2013). However, 17% is still having only little experience using it and can be categorised as "weak users" (VOX, 2011).

There is a correlation between age, education and digital literacy with the young people being more likely to use ICT than older people. The most common barriers in ICT use for inexperienced users are lack of interest, motivation and knowledge (Wagner et al., 2010). However, technology adoption is a complex issue and older people have more problems in dealing with it than younger people, which means that the older may be less able to benefit from innovations in technology. This difference in digital literacy represents a challenge in a society where the use of ICT is growing fast.

For older people, ICT-use can make a significant contribution to their quality of life and sense of empowerment by affecting interpersonal interactions, promoting cognitive functions and contributing to experience of control and independence (Shapira et al., 2007; Cotton et al., 2012).

In the context where a continuously growing amount of information is becoming digitally available, policy makers should guarantee the right of equal and granted access to information to their citizens through e-inclusion policies. In order to implement relevant measures to increase digital competence within inherently inexperienced group of users, such as older people, it is important to gain more knowledge about digital literacy and digital barriers in the population (VOX, 2011). This means that it is necessary to have an updated knowledge about elderly people's access to computers, their Internet habits and what motivates their use, or non-use, of ICT.

Raising awareness of ICT use and developing efficient training programs have been demonstrated to be an incentive among potential users (Shapira et al., 2007; Mitzner et al., 2010). Developing ICT-use training tailored to the needs of users without experience is therefore a necessary challenge for the e-inclusion of traditionally digitally excluded population. This ICT training, coupled with the awareness of its benefits can empower citizens for daily life tasks (e.g., internet banking), human communication (e.g., social networks and videoconference) and personal autonomy (e.g., access to health information).

1.1 iAge

The Norwegian pilot “Grandma on the web” forms part of the iAge project, an Interreg IVB North Sea Region (NSR) European project whose main aim is to promote e-inclusion among the increasing ageing population in European areas.

In the iAge project, partners from 6 countries of the NSR cooperate and work to transnationally develop new approaches in service delivery and economic restructuring through joint development of ICT innovation. The overall aim is to increase the use of ICT among the aged population, to keep them active and facilitating their participation in social and work life. The project pursues an inclusive growth, made by modernizing the labour market by palliating psychosocial aging changes through ICT skill training and acquisition. The development of policies and strategies is built around the end-users as part of the inclusive approach. One of the main goals of iAge is to promote the use of ICT through the instruction of inexperienced elderly users in relevant tasks for their lives, such as basic computer skills. This learning in general terms works towards improving employment opportunities, quality of life and social participation.

The transnational activities and joint analyses carried out in the iAge project create economies of scale to allow positive achievements towards the European 2020 Strategy (EU, Summaries of EU Legislation, 2010), innovation and employment objectives and enable regions to improve the quality of their policies.

1.2 Grandma on the web

The pilot “Grandma on the web” forms part of the iAge’s work package 4 (WP4), whose main objective was to improve the regional development through promoting the use and accessibility of ICT in relation to lifelong living and to identify and evaluate educational strategies.



The aim of “Grandma on the web” was to get an insight in ICT use of elderly people, the motivational factors for such use and to specify their needs as technology users. In addition, the pilot included the design, implementation and evaluation of educational programs to instruct elderly people in ICT use and increase their digital competence. The pilot was based on the fact that, in Norway, the municipalities are locally in charge of the e-inclusion of their citizens. The “Grandma on the web” pilot was an inter-municipal cooperation between the municipalities of Lillesand and Vennesla in the Kristiansand region (Knutepunkt Sørlandet) and the Centre for eHealth and Healthcare Technology at the University of Agder (UiA) in Southern Norway. This report summarizes the main results of the “Grandma on the web” project by a short presentation of three sub-projects:

1. Mapping elderly citizen’s computer and ICT use.
2. Using ICT training as an arena for an intergenerational learning experience.
3. Building competence in the usability evaluation of applications/public portals.

2 Mapping elderly citizen's computer and ICT use

2.1 Introduction

To get an insight of ICT use among elderly, the motivational factors for such use and their needs, a study was conducted asking the following questions:

- To what extent do Norwegian elderly people use computer and the Internet?
- What motivates their use/non-use of the Internet?
- In what areas are there needs for training?

2.2 Methods

In this study, a mixed-methods sequential design was chosen using both quantitative and qualitative measures. A survey for mapping computer and internet usage was designed for people of 65 or older from the municipality of Lillesand. Specifically, the survey gathered information about the elderly's computer and internet usage reason to get started, motivation for use, and need for training. In addition, to get more in-depth knowledge about ICT use, 3 semi-structured focus group interviews were conducted with informants who had previously responded to the survey.

The survey was distributed to a randomized and stratified sample (in relation to gender and age) of people over 65 years old in a small municipality in Southern Norway. The municipality has approximate 10 000 inhabitants of whom 15% are over 65 years old. A total of 500 individuals received the questionnaire by ordinary mail. 178 people responded to the questionnaire, of which 60% were men. About 45% were aged 65 to 69 years, while only 22 individuals were 80 years or older.

In connection with the survey, participants received an open invitation to participate in focus group interviews. 30 people provided their contact information and consent to be contacted later. An invitation with the date and time for interviews was sent to the 30 interviewees from the municipality. In total, 10 people participated, of which six were male and four female. The participants were between 65 and 86 years old. All of them had "some" or "a lot of experience" in ICT use.

2.3 Results

The information gathered in the survey and the focus group interviews is presented together and categorised in four groups: Access and use of ICT, Attitudes towards use of ICT, Improvement of ICT-skills and How to facilitate ICT-use among elderly people.

2.3.1 Access and use of ICT

Results from the survey showed that 9 out of 10 participants had access to a computer at home and that most of them used the computer weekly or daily. All 10 informants who participated in the focus group interviews were frequent users of computers and the Internet. They used computers mostly for activities such as online banking, sending mails, reading news, finding information and other undemanding tasks. Relatively few participants actively look for health pages when searching for information and only a few were active users of social media. The point in common across all participants was that they were not advanced users.

Most of the participants reported to have learned the use of the Internet attending specific courses and through guidance from relatives or acquaintances. In addition, some had learned at work while others were self-learners.

The most common barriers impeding the improvement in using ICT were: lack of interest, no need for further training, having other people doing it for them and poor offer of training courses in their neighbourhood. In addition, several of the informants reported that they had experienced episodes of difficulty using computers. Typical problems were related with the difficulty of understanding specific terminology and issues associated with updates of systems or sites. According to results from the survey, slightly fewer than 20% of the respondents did not use ICT. Half of them had access to a computer at home but other family members were the computer's users. Among the non-users, about one third stated that they wanted to learn to use ICT. The others were not interested.

2.3.2 Attitudes towards use of ICT

The three main reasons given for starting using the Internet were that the participants had previously been introduced to ICT at work or in educational situations; they wanted to be able to order goods and plan trips and because they had the need to get access to public services. Their main motivation to continue to use the Internet was that they believed that it was necessary to follow along with what was going on in the society and to maintain social contacts. Most of the participants, including non-users, felt that it was important to learn to use ICT to feel included in the community.

Active users of ICT admitted that computer use led to increased quality of life, both in terms of social life and mental health. All of them believed that different types of technology could contribute positively to a good life, i.e. use of the Internet facilitates finding all sorts of information and contacting people. In addition, while discussing how technology could contribute to their lives, informants were also concerned about what they could do by themselves to have a better life. Several emphasised the importance of being active and socially engaged. For them, it was essential to have something to do to avoid feeling inactive. It was stated that technology could positively contribute to self-development and increased self-reliance, but negatively by leading to inactivity and isolation.

Answers about monitoring technologies were practically oriented in considering topics such as security and privacy, but these topics were perceived as subordinate when the technology was used for a good and fair purpose. None of the interviewees showed scepticism

regarding to monitoring in connection with the use of certain types of technology. However, even though participants were positive about the use of technology and technological developments, they were sceptical about specific things related to the use of technology. Many were afraid that posted information in social websites could be misused, and they found it difficult to know what information to trust. Many were also sceptical of computer use in general, underlining the negative impact of computing habits on adolescents' way of life. Some interviewees also highlighted that the Internet could pacify and thus contribute to isolation. However, they believed that the Internet had a great place in society and therefore that it was important that seniors received training in order to be "e-included".

2.3.3 Improvement of ICT-skills

Approximately two-thirds of the participants stated that they had "some" or "considerable" need to strengthen their skills, while a third "had not" or "little need". Demand for special training topics such as genealogy, Skype, use of search engines, image processing, organising and editing files and how to book and order trips were mentioned. In addition, some of the participants wanted to learn how to use social media and entertainment applications. Almost half of them wanted to attend courses in the future.

2.3.4 How to facilitate ICT-use among elderly people

When participants were asked about how to encourage elderly people to increase their digital skills, several of them mentioned that the local municipality should be in charge of organizing different types of courses. In addition, participants made various suggestions about how the municipality could try to entice more people to attend courses, such as combining courses with a social event, lectures or serving food. It was suggested that the municipality could also offer home tuition or assistance to those who could not physically attend the courses by cooperating with voluntary organizations and schools.

When asked about what was the biggest obstacle to get people attending ICT courses they admitted that many elderly people felt they were wasting their time. In addition, many of them were afraid that something could go wrong with the computer. Therefore, it is important that future courses start at a sufficient low level so that every student can follow the course's pace. It is also important that the course fee is low. One participant also suggested the possibility of having retired people as trainers.

2.4 Discussion

2.4.1 Access and use of ICT

The results from the study revealed some important findings about the elderly population sample interviewed through the questionnaire and the focus groups sessions.

Almost all of the participants had access to a computer, which means that almost as many in this age group have access to a computer as in the general Norwegian population, 93% (SSB, Use of ICT in households, 2013). However, a national survey in Norway from 2011 showed that 1 in 4 people between 65 and 74 do not have Internet access at home. Among those between 75 and 79 years, the proportion without Internet access is 60% (SSB, Use of ICT in

households, 2011). This means that there were a greater number of elderly users in our survey who had access to computers and the Internet compared to the estimations of the general population.

The survey showed that 80% of the participants were frequent users of technology. The section of Access to ICT showed that 91% of interviewees had a computer at home. This result is in contrast with other lower average rates from Europe without age distinction, 79% (Eurostat, 2014), confirming the position that Norway occupies with the highest ICT levels.

Most of the participants of the survey used the Internet for activities such as Online banking, e-mail, sending attachments, reading online newspapers, finding phone numbers and addresses and finding factual information. The study showed that relatively few participants were advanced Internet users. That means that most elderly people of the sample were still "cautious users", who had a relatively limited range of potential activities available to perform. Therefore, there is a great potential to bring to those "cautious users" an insight into further possibilities and benefits of using ICT.

Additionally, few participants used social media as Facebook and Skype. Use of social media is in many ways a positive contribution to the social community from the elderly, through contact with relatives, but also to make them able to be in touch with old and new acquaintances. Therefore, it is important for the elderly people to be informed about the potential of these media and to stimulate ICT use among them. In particular, the use of videoconference software (e.g., Skype) can help them to establish and maintain the contact with others despite the large distances, which is an important aspect for people with disabilities or unhealthy status. However, interviewees also expressed a general scepticism about the technology. They were afraid that the technology would contribute to social isolation rather than contribute to strengthening social relationships. Herein lies much of the technology's duality: while it represents an opportunity to strengthen social and independent lives, it may also contribute to the contrary, social isolation and passivity.

The main barriers for the improvement of ICT skills were lack of interest, that interviewees had other people, such as partner, who did the ICT tasks for them, and that they felt that they had enough skills and knowledge to be able to currently manage by themselves. There were a relatively greater number of men than women who responded to our survey. This can be explained by the fact that men are more active users of computers than women in Norway in the age group above 65 years old (SSB, Use of PC and Internet last 3 months, 2014). Especially those women, who do not have the necessary ICT skills and generally live longer than men, will find difficult to access services in the future if they have to manage on their own. Many women of the older generations in Norway have often had smaller connection to the labour market compared with men, and were relegated to a secondary role such as taking care of the household economy. These women will be especially vulnerable to being socially e-excluded. Therefore, it is important to provide training specifically aimed at older women (Lorenzen, 2008).

Another important barrier for ICT use was the reported low usability experienced. In addition, informants also found that much of the data terminology was difficult to understand, i.e., error messages, and layout changes associated to software updates increased frustration. Fear of making mistakes was also reported as a limitation to try out new things. In conclusion, designing and creating software updates for ICT systems requires taking elderly users into account, making systems predictable and easy to use, and providing training in ICT with the consideration that elderly users usually require more repetitions and more time to learn.

2.4.2 Attitudes to ICT

Many of the participants were active users who believed that the Internet was a positive contribution to their lives, both socially and mentally. These are aspects of Internet use important to convey to non-users. When used properly, the Internet can be an important supplement to prevent risks of loneliness and inactivity and contribute to self-control and independence among the elderly (Sum et al., 2008).

All interviewees were very positive about the various technologies that were presented to them. They had no qualms about the use of technology which in some cases entail different forms of surveillance, but they believed that many people were overly sceptical. They had a pragmatic approach where they were primarily concerned with the practical benefits of using technology. This very positive attitude stands in contrast to stereotypes that suggest that older adults are unable, unwilling or afraid to use technology.

2.4.3 Improvement of ICT-skills and facilitating ICT-use

Half of the participants expressed their interest to attend courses. This showed that there is a great potential to increase ICT skills in the elderly by offering them ICT courses. This is an important matter to be addressed by the municipalities. It is a challenge getting municipalities to offer courses for a growing group of older people who already have some ICT skills and are ready for further skills development. It is important that these groups of seniors have the opportunity to evolve in their ICT use to become advanced users so that they can effectively explore the advantages that a comprehensive and full use of ICT provides. It is especially relevant to focus on the topics that strengthen their abilities and social network.

The background for the EU's digitisation strategy is to make important community functions available for all residents (EU, Digital Agenda Scoreboard, 2014). Therefore, when designing ICT-courses, there should be a stronger focus on raising awareness in seniors, on ICT contribution to social participation and self-efficacy. This means that in addition to a focus on the possibilities of using social media, there should be a stronger focus on how to find relevant and high-quality health and public information.

There is a group of elderly people who are particularly hard to reach by traditional courses, i.e., due to lack of interest or confidence. Therefore, it is important that the municipalities, for example in collaboration with volunteers, are creative in terms of information and recruitment. One way to do this is to use younger generations as "door-openers" of the ICT world, teaching the basics of ICT-use to elderly people without ICT experience (Thygesen et al. 2014).

2.5 Conclusions

This work studied the computer and Internet use among elderly citizens from a small-size Southern Norwegian municipality using a questionnaire and three focus groups. The majority of the interviewees had and frequently used a computer at home. However, still a considerable amount of elderly people did not use ICT. In terms of institutional responsibility, the local municipalities were attributed a key role in informing their citizens about the existing technological solutions and offer of ICT courses.

3 Designing educational programs in ICT for elderly

3.1 Introduction

One of the aims of “Grandma on the web” was to design, implement and evaluate educational programs in ICT to instruct elderly users. In the period from 2012 to 2014, nine ICT courses for elderly people were run for the project, three in Vennessla and six in Lillesand municipalities in Norway. The courses instructed elderly people in ICT use, facilitating a learning experience gateway between different generations. Based on evaluations of the educational programs, suggestions were made for further educational programs for elderly people.

The project had the following research questions:

- How can elderly people be instructed in the use of ICT required to be e-included in the society?
- How can ICT training be used as an intergenerational learning experience?

3.1.1 Course design in Vennessla - an intergenerational teaching model

In Vennessla, the teaching model combined ICT-training for elderly people with an educational program at school. The courses were used to instruct elderly in ICT use and also to facilitate a learning experience gateway between different generations. Teachers were schoolchildren (14 years old) who organized ICT-courses for their grandparents and other elderly people in the community. The course formed part of an elective work-life training program at a middle school, specifically designed for pupils who want more practical subjects at school. Grandparents and other elderly people in the community were invited into the school for a two-hour course per week throughout a total of six weeks. An experienced teacher coordinated the program. In the courses, school children worked as teachers and each pupil was responsible for instructing one elderly person during the course. The teachers (pupils) sat beside the elderly students to instruct them. An easy-to-read simplified user manual in lay Norwegian language, created in collaboration with volunteers from a volunteer centre in the municipality, was available for each student during the lesson. The manual included didactical explanations of basic ICT functionalities, such as how to start up the PC, how to access online email system or how to use applications such as Google search, online newspapers, Facebook and Skype. Navigating through travel sites and checking out how to book travel tickets was also part of the program. Three free courses were arranged at a small-middle size school between 2012 and 2014.

29 elderly people participated as students in the three courses, whereas 14 of them contributed to the evaluation of the courses. Course participants were invited either by the schoolchildren (teachers) or by a representative from the municipality. In addition, the courses were advertised in the local newspaper. Another 29 young people were recruited as teachers. Every course had one adult person working as a supervisor.



3.1.2 Course design in Lillesand – testing different course models

In the municipality of Lillesand, six ICT training courses were arranged under the “umbrella project” iAge. The target group was composed of inhabitants aged 65 and over. Around 100 participants joined the training activities. The lecturers were students from Young Entrepreneurship in the lower secondary school (1 course), volunteers from the Centre for the Elderly (1 course), and from the Centre for Adult Education (4 courses).

The courses were advertised in the local newspaper. Each course consisted of two hours of instruction each week for three weeks. Participants had to pay a fee to attend the courses. All courses were held in the premises of the Adult Education Centre. On the first course day 2-5 pupils were teachers, but because of a disagreement among the pupils two of them quit after the first day of class. The first day, there were 12 participants who showed up, while in the last day 6 still remained. On the other courses a single teacher had lessons for 10-12 elderly. The teacher had extensive experience on teaching.

3.2 Evaluation of the courses

The study had a qualitative, descriptive and exploratory design using semi-structured interviews for the attendees, teachers and the coordinator of the courses.

In Vennesla, data were gathered through 6 semi-structured interviews following an interview-guide consisting of 10 open-ended questions. The interviews were carried out between April 2012 and April 2014. All interviews were audio-recorded and then verbatim transcribed.

In Lillesand, data were gathered through 2 focus group interviews using the same interview guide as in Vennesla. The first interview was conducted after the course which was organised by the students of Entrepreneurship and the second interview after the first course organised by the Adult Education Centre. The first interview was conducted in February 2013, while the second was in November 2013.

In Vennessla, fourteen elderly participants of the 3 ICT-courses were interviewed, 12 women and 2 men. There were 5 teachers in total: 4 young teachers (all girls, 14 years old) participating in the last course and 1 adult, who worked as a coordinator and as a supervisor, in the last the course (woman, 55 years old). In Lillesand, 7 elderly participants were interviewed; 3 women in the first interview and 2 women and 2 men in the last.

Prior to each interview, all participants received written and oral information about the project. Each participant was informed about their data confidentiality, that participation was voluntary and that they had the right to withdraw at any time without a reason.

3.3 Results

The main goal of this part of “Grandma on the web” was to pilot teaching models in ICT for elderly people. The experiences gathered from the pilot courses’ were identified through interviews and are next presented.

3.3.1 Motivational factors for attending courses

The majority of the course attendees had either none or only very little experience with computers, even though most of them had a computer at home. There were different motivations for participation in the courses. Participants in Lillesand signed up for classes because they had a genuine desire to learn, some out of curiosity, and others because they believed that it was necessary to be e-included within the society. However, several of the participants in the intergenerational courses in Vennessla were not initially motivated and did not previously have the intention of learning how to use computers. They joined the course because they were invited, and sometimes convinced by their grandchildren or by the contact person from the municipality.

3.3.2 Evaluation of courses

The course-attendees reported that they had a positive learning outcome from the courses. The course was a “door-opener” for further exploration of the Internet’s possibilities and many had great pleasure of discovering the opportunity to have contact with friends and family through social media.

The ICT courses in both municipalities were organized with a combination of demonstration and one-to-one instruction methods. Some preferred structured courses, while others preferred to have the freedom of choice.

In Vennessla, the diversity of elderly’s and young teachers’ ICT-level presented a challenge for the developing of an effective and pedagogical teaching program. The elderly had difficulty in defining their needs and at the same time the young teachers run out of ideas and did not know what to teach. In this context, most of the elderly recommended to have a guide with examples of what to do.

In Vennesla, the presence of the coordinator/supervisor throughout the course was an important factor. It allowed to monitor the development of the course and, especially, to aid the young teachers if they needed any help.

Participants at the course organised by the Young Entrepreneurs indicated that the course had been too little structured. Without an adult coordinator, the responsibility became too large for the young teachers.

Participants at the course organised by the Adult Education Centre experienced that there were too many participants to be taken care of by only one teacher. All of them had individual needs and the teacher required more time to answer individual inquiries. They wanted to be given tasks and a simple "recipe" so that they could work more independently. An alternative solution had been that the teacher had brought an assistant.

All courses focused on teaching elementary computer use. Most course-attendees reported that they had a positive learning outcome. The course was a good initiative for further exploration of the Internet's possibilities because it triggered elderly's curiosity about what opportunities existed around computers.

When asked about the main barriers to use computers, many of them admitted that it was hard to know what was available and therefore difficult to know how and where to look for information. They also found it difficult to directly transfer knowledge from the course's to home's computer. Most participants wanted to attend additional courses. When asked what they wanted to learn, many of them said it was difficult to answer considering that they were not completely aware of all the possibilities.

One of the main goals of the course plan in Vennesla was to develop a model that combined training of ICT for elderly people with contact between generations. Most participants thought it was very pleasant to spend time with the youth. However, some pointed out that there were noticeable differences among the young teachers. It was also commented that there was a disparity between what knowledge the students were interested in and teachers' competence. Sometimes it was difficult for the young teacher to know what to work on next.

3.4 Discussion

One of the key elements found in the model was the role that the young teachers played as an informant of the course and as an incentive for such attendance. The ability to have a good relationship with their grandchildren was an important motivating factor for many of the students.

Results also showed that the inexperience with ICT carries out the unawareness of ICT use benefits, an important factor for promoting ICT use (Wagner et al, 2010). Then, a key part of courses is to educate the elderly students about the benefits of ICT use. In addition, informing the students in advance of what are the benefits and possibilities of ICT use can ease the learning process.

The course were created with a combination of demonstrative one-to-one instruction methods. However, the students sometimes had too few things to do. In these situations it was difficult for the teachers to instruct them with new unplanned tasks. Therefore, a structured content would have given the students a road map to follow. An alternative approach is to give the students freedom to decide what they want to learn. However, this could attach a potential trade-off of deciding on their own tasks, which could overload students with too many decisions to make without actually having enough experience for it. Therefore, a combined approach is proposed, where a planned course structure is made at the same time there is room for students to decide what to do.

Another potential problem is the wide range of ICT experience and knowledge that students might present. This challenges the preparation of the teachers who should be able to fill the gap between students with different backgrounds and experiences. A possible way to solve the gap is to send a questionnaire in advance to future students asking questions about ICT experience, motivation for participation, what they would like to learn, and what their interests or hobbies are.

Studies showed that because of age-related changes in cognitive and physical functions, elderly people are usually slow, make more errors, and are less likely to have self-confidence in their computer abilities (Kim, 2008). Therefore, it is important to develop learning material that best fit elderly people's and individual's characteristics (Jones and Shelbourn, 2011; Kim, 2008). However, the implementation of these recommendations might be difficult to put into practice at once. Therefore, the supervisor/s should play a key role in the continuous development of the learning program and especially on young teachers' instruction adapted to the local particularities and needs of elderly students. In addition, this reinforces the idea of creating a detailed learning plan for the course specially adapted to older students, where teachers are previously instructed of the range of tasks that should be included in the course.

The evaluation also showed that the elderly students felt that they had a positive learning outcome from the course. The course triggered further exploration of the Internet's possibilities and many of them had particularly great pleasure of discovering the opportunity to have contact with friends and family through social media. It is precisely in this area that the use of technology can have a great potential in relation to elderly people in future. In this line, social isolation is one of the biggest health threats facing the elderly today. For the elderly, the use of Internet can help establish or maintain their social network despite health deterioration.

The evaluation showed that ICT use learning was a successful arena for an intergenerational experience. There were cases where people who would never go to a course by themselves went only because they were asked by a person they knew (e.g., young teacher relative or acquaintance), and thank to that could have social interaction and get to know other people. The outcome of the course was noticeable in both directions: most of the elderly attendees acquired basic ICT skills at the same time that young teachers had the opportunity to develop qualitative social values such as goal achievements and responsibility (see Fig. 1).

and lack of motivation. Thus, teachers should be trained to highlight benefits of ICT use and motivation for use.

It is recommended to have a manual for each student for basic ICT use where they can search, by themselves, for information related to the course. Additional content of the manual could include information sources about relevant general topics customized for the students, such as health portals, local organisations and activities.

Another lesson learned from the course experience is that to have a projector with a large screen could be used as an additional tool for showing specific applications or solve general problems, where all students can see the same content at the same time (e.g., how to log in to Skype for videoconference or how to set up the computer video camera).

What should be the course structure?

It is recommended to have structured pre-made tasks to give to students, with teachers having the solutions at hand. At the same time, it is desirable to include free choice tasks where students ask for specific problems or skills they would like to learn. In the latter case, a list of possible choices would be useful for teachers to make them aware of and prepare them for potential questions or issues related to the tasks presented to students.

4 Building competence in usability evaluation of web applications/public portals

Another aspect the Norwegian pilot wanted to address was to increase the competence about evaluation of user-friendliness (usability) on applications/web-portals. Through iAge, the University of Agder has had a transnational partnership with the University of Abertay Dundee (UK) and Hanze University Groningen (Netherlands) in completion of a PhD course in Usability design. In addition, a former Research Scholar from University of Abertay Dundee has been employed at the University of Agder in a postdoctoral position. This forms the basis for further cooperation between the two universities beyond the iAge period.

5 Conclusion

This report has presented the project called "Grandma on the web", the Norwegian pilot of the Interreg IV European project "iAge". "Grandma on web" provided a valuable insight of ICT use of elderly people living within Norwegian municipalities, the motivational factors for such use and a specification of their needs as potential technology users. Norwegian municipalities currently face the challenge of e-including their citizens in continuously aging population with more access to technology than ever but without the sufficient ICT use knowledge and awareness of its benefits. It is primordial for this age segment of the population to reach a sufficient and affordable competence in ICT use to feel, be and live included in the current society. This approach aligns with the EU's digitisation strategy of granting and making accessible community functions for all residents, whose pillars are raising awareness of ICT benefits, social participation and self-efficacy.

Different key aspects for digitisation and e-inclusion of elderly population were investigated by "Grandma on the web" in the context of Norwegian municipalities. The Access to ICT is granted by the ownership and frequent use of a computer by almost the majority of the participants of the sample. However, they are self-defined as "cautious users", doing just a single or a few elementary activities such as sending emails, reading online news and weather forecast. Most of the ICT potential is therefore unknown by these non-advanced users, such as the possibility of contacting friends and relatives through videoconference or social media. The main barriers for improving ICT skills were lack of interest, ignorance of ICT potential, low usability and difficulty to understand terminology. The Attitudes towards ICT showed that the Internet had a positive contribution to their lives both socially and mentally. These aspects were found relevant to be explained and transmitted to non-users. Regarding the improvement of ICT skills and facilitating ICT use for elderly people, those with lack of interest or knowledge on ICT benefits were particularly hard to reach and underlined the importance of having effective methods of disseminating the ICT use benefits among all segments of the population, especially to elderly non-frequent users.

The outcomes of the project also included the design, implementation and evaluation of educational programs to train elderly people in ICT use and increase their digital competence. The importance of creating an arena for intergenerational learning experience has been demonstrated by the effectiveness of ICT courses instructed by young people as teachers enhanced by the key role that municipality representatives and relatives play as enticers for elderly people to join the course. In addition, elderly people's awareness of the benefits of ICT use and acknowledgement of their advantages via specialised tuition seemed crucial for the interest, adoption and continuous use of ICT for the e-inclusion of these age segment population.

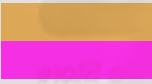
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