GUIDING THE ELDERLY INTO THE USE OF COMPUTERS AND INTERNET – LESSONS TAUGHT AND LEARNT

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ABSTRACT

Demography of Finland and that of Western world is changing rapidly. In the era when most of the services are brought or being brought into the digital format and available from the Internet, there is a need to accommodate and involve also the elderly into the Information Society. Instead of pure accommodation, however, we should guide them to this new world from their motives, life experiences and abilities on. This paper describes one way of teaching the elderly people of age 52 to 74 the basic skills in computing. Study is based on the experiences gained from two 20 hour elementary computer courses held in the village of Joroinen, Finland in spring 2007. Data was gathered via pre-interviews and post-WWW-questionnaire. During the course, ethnographic methods were also used in case of observations and short field notes. Experiences from Seniors' Club were also utilized. Elderly people do need more time, very structured outline and instructions. However, they are very eager to learn and also possess capabilities for that. Concepts learnt during the short course were not that many but we reached our main goal: to inspire seniors to use ICT and to get rid of the fear of computers. This paper also presents the rules of thumb in teaching the elderly and discusses the task of course-design.

KEYWORDS

Senior Citizens, Peer Support, Teaching Elementary Skills In ICT, Internet, Training And Support, Cognitive Slowing.

1. INTRODUCTION

Population of Finland is getting grayer and grayer, while the rest of the society and authorities move their services more and more into Internet – for citizens and customers to serve themselves. In this business, however, the elderly people may become trampled, as surfing the Net, filling out web-forms, searching for information and using the computer itself, are not trivial tasks for many elderly people. According to Eurostat (2005) the population over 65 will double till 2050, when about 1/3 of the population is estimated to have reached that limit. In Finland the numbers look like in Figure 1, where the peak will be achieved in 2025. Internet usage among 60-74 year old Finns is higher than in EU25 general, reaching about 36 % of that age group (Statistics of Finland, 2006a), and it is said to increase rapidly.

EU's i2010 initiative and its action plan on ICT and Aging sets three areas rising from the user needs. It sets high emphasis on elderly users' needs in using, learning and taking-up the ICT. Among the goals are "Ageing well in the community" and staying socially active and creative. EU also aims at reducing social isolation and improving the quality of life of its citizens.(COM(2007)332). How accessible Web 2.0 and all its applications the currently are, is another issue. First one needs to get acquainted with very basics of computer usage and command the information overflow of the Internet, as well as new terminology and metaphors for things encountered. Zhou et al. (2007), for example, found out that error messages that are

printed out in foreign language caused lots of confusion among the Japanese elderly and that support that – in general – was needed was highly concentrating on using the Internet and e-mail.

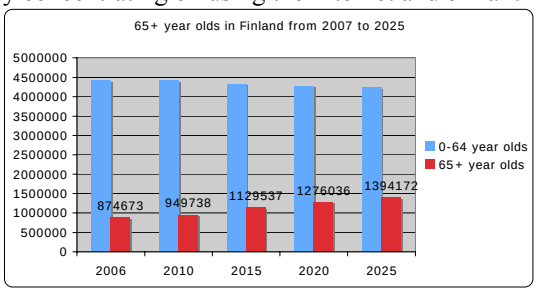

Figure 1. Elderly people vs. rest of the population in Finland (estimation). Data: Statistics of Finland 2006b

Not having access to Internet or the ability to use it may also put elderly people at a disadvantage and make their independent living more difficult (Czaja and Lee, 2007). Selwyn (2004) notes while stating that older adults should be more involved into changing ICTs and not vice versa. How could we make it become more interesting, attractive and useful option – to fit better to their needs and desires?

Some sources claim that computer usage may increase the well-being of elderly people (Dickinson and Gregor, 2006; Osman, 2005), though generalization of findings should pay attention, as old people as a group is a very heterogeneous both in their physical and cognitive abilities. In the study of Osman (2005), while introducing computers and Internet to older users in Care OnLine –project, his informants also felt that their social interactions have increased and feelings of isolation reduced. It thus had a real impact on their everyday life.

A good quality of life consists of elements like social activeness, creativeness, legitimate and appreciated citizenship – among other, mostly subjective evaluations; according to Duay and Bryan (2006) the successful aging involves communication with others, accommodation with changes and maintaining health at physical, mental and financial levels. What else this overtly changing ICT scenery of ours demansd than just abilities for life long learning and coping with the changes?

ICT can offer new ways to keep in touch with one's relatives and friends, reduce the feelings of isolation and include the elderly more firmly and equally into the society of today, where we, as e.g. Czaja and Lee (2007) state, are currently living and interacting. How these things should be taken into account in teaching and guiding elderly to become independent users of computer and Internet is under a scrutinize in this paper.

Target group – the elderly people, seniors – of this research consists of people living their *Third age* (Laslett, 1991), people who are still active members of society and commanders of their own lives. They possess a vast amount of life-experience, which in no ways should be wasted but instead, put into a good use – also in digital era. Older people are willing, receptive, and capable of learning new things (Osman, 2005; Czaja and Lee, 2003; Courtenay, 1989; Newell and Gregor, 2002; Jones and Bayen, 1998). However, they are often more anxious and less confidence in their abilities to use ICTs successfully, as Czaja and Lee (2007) say. The elderly also have a basic need to be a part of the modern day society, and e.g. communicative and more sociable side of computing is what enchants the elderly, as well (Osman, 2005; Duay and Bryan, 2006; Selwyn, 2004). One key element thus is, to make a good first encounterer with computers and Internet. Peer support is also an important issue to ponder.

One means to get also the elderly involved in the pace of ICT and its successful usage, includes also proper training. What is an appropriate teaching style for elderly? Duay and Bryan (2006) emphasize the sociability of the learning experience and taking their diverse experiences and ideas into account. Instead of using a passive lecture based style, more interactive and facilitative approach should be applied – to really get elderly personally involved in the learning process. Jones and Bayen (1998) by their side have taken a cognitive aging approach and stated some recommendations based on those. There are some cognitive abilities that weaken as a function of old age. These include, for example, reasoning, discourse comprehension, inference formations, acquisition of new information and its retrieval from memory (Jones and Bayen, 1998). These are what Czaja and Lee (2007) call for the components of fluid intelligence; working memory, ability to select and attend and spatial cognition weaken. Fluid intelligence usually declines with age, but its counterpart – crystallized intelligence (knowledge) tends to remain pretty stable or increase until the later decades of one's life.

Natural cognitive slowing could be taken into account by allowing enough time to instruction, allow the elderly time to take notes and ask questions during the lessons, minimizing the amount of material to be read and allow them to make hands-on at their own pace (Jones and Bayen, 1998). For backing up the processing capabilities of the elderly (working memory and attention), the best way is to use environmental cues like icons in the toolbars of different applications and keep the consistence of software in mind. Breaking up the instruction into smaller chunks is also favorable and a trial to relate new information to something that elderly already know, though this is sometimes impossible, as the metaphors differ. Usage of pictures, time for practice and equal amount of computer time also supports the memory. In short: the previous research suggests that recognition rather than recall works as a good rule of thumb. For attacking the lack of inhibition elderly may pose, it is advisable to make learning goals explicit, pay attention to language used (clear, ripped off the jargon) and keep the class room noise free (Jones and Bayen, 1998).

Weakened visual acuity is among the most common age-related problems. It can be helped by customization of Desktop, font sizes, placing of computers etc. Dickinson et al. (2005) also give good strategies for teaching the elderly, such as creating a positive first impression, avoiding use of jargon and describing one approach taken in the UK while teaching the basics skills in computing to the elderly. They, for example, simplified the browser while teaching the surfing.

This paper describes the settings of and conducting a computer course for the elderly people (section 2), introduces how Action research was applied in this study (section 3), reports the results (section 4) and shows its implications and tries to further rise discussion about teaching for elderly: what and how? (section 5).

2. THE COURSE SETTINGS

The courses for teaching elderly people the basics in computing were designed so that cognitive issues and special needs of the elderly were taken into an account (Dickinson et al., 2005; Czaja and Lee, 2007; Jones and Bayen, 1998). Among those age-related deficiencies are slowing of fluid intelligence and its components like reasoning, working memory and spatial abilities. In addition, we utilized our knowledge about working with elderly people in the technology club called Seniors' club (Eronen et al. 2006; Naumanen and Tukiainen, 2007). However, it is good to point out, that the life experience and knowledge acquired through education tends to remain stable or increase, as said by Czaja and Lee (2007), and the motivation and attitudes towards ICT are mostly positive. One of the main goals of the courses held was to further support this positive attitude and get elderly people interested in digital world and showing the possibilities it can offer.

2.1 Participants

There were totally 28 elderly people aged 52 to 74 years of age (average 65) taking part in two courses. They all had different working backgrounds, all were retired and the main motivation to attend the course came from their near ones (children and/or grandchildren). Majority of the participants were females (75 %). There were 8 total novices (29 %) (with no prior computer usage) in the courses. Many participants already owned a computer and an Internet connection (68 % and 54 % respectively). The average computer usage was about 2-3 years, though the usage may have dated back to 80's and focusing on using certain system at work. All were voluntarily participating the course and were selected in the order of enrollment day/time.

2.2 Courses: Settings and Content

There were two courses held as a part of project "ICT for supporting elderly people" during April and May, 2007. Each course consisted of 20 contact hours of teaching basic skills in computing and Internet usage. The emphasis was set on showing/teaching the possibilities of Internet and its social features. In course 1 we had two-hour lectures twice a week, while in course 2 we met once a week with 4-hour lectures. Courses took place in a computer class of a local high school in the village of Joroinen, Finland. Both courses had 14 participants, majority of which were females. First course was taught by two high school students, second one by the author and her assistants from Seniors' Club.

The framework of a schedule was presented at the beginning. This framework was then applied and augmented during the course. After becoming acquainted with each others we proceeded to get to know the computer and its accessories, how to open and close the computer and becoming familiar with the Desktop environment. As a platform we used Finnish version of Microsoft XP Professional, run on desktop PCs aged couple of years. Learning materials were given to participants, more in the course 2. They consisted on basic guides (XP and Word) as well as some link-lists and further reading, targeted especially for the elderly computer users.

Other issues covered during the course were: working with files and folders (saving, deleting, copying, moving), word processing (basics in Word: writing, formatting, adding pictures), Internet & its possibilities (Information retrieval/search, search engines and portals, www-services, e-mailing, e-cards). The last session was dedicated to open questions and topics raised by the participants, for example digital photography and how to buy/select a computer. There were also some optional homework to be done. They were designed to support the things covered by the course, for example writing a short story, entering a Web-challenge (information search) or getting to know one's home computer. Making questions was also encouraged during the whole course.

3. RESEARCH APPROACH

3.1 Action Research

According to Baskerville and Myers (2004) "Action research aims to solve current practical problems while expanding scientific knowledge". Action research is a change-oriented approach, where some social processes are changed through well-planned action, and furthermore so that this change is researched. (Baskerville, 1999; Cole et al., 2005).

The nature of AR is that of collaborative, iterative and contextualized and the essence of AR is a process consisting of two stages: 1) *a diagnostic* one, where joint analysis of the current situation is being made and 2) *a therapeutic* stage, where the changes are actualized and studied. Researcher brings the knowledge of AR and general theories into the process, while the participants bring their situated knowledge. (Baskerville and Myers, 2004). Furthermore, the cyclical process of AR can be divided into five parts: 1) diagnosing 2) action planning, 3) action taking, 4) evaluating and 5) specifying learning. (Susman and Evered in Baskerville, 1999; Tomal, 2003). Later – in section 3.2 – we will demonstrate the course of events of this study structured according to these phases.

The contextualized and change-oriented nature of AR leads to the acceptance of three effects, namely: 1) *The interpretivism*: researcher is a part of the study and some values and a priori knowledge of the researcher cannot be totally avoided; the social meaning of the action shared must be taken into account, as well. 2) *The idiography*: each social setting consists of individuals with their varying values and competencies – AR tends to specify this by taking the subjects as active collaborators in the process. 3) *Qualitative data*, which follows from above mentioned two points, as data gained – the meaningfulness – often uses the terminology of the subjects, their idiographic descriptions. What Baskerville (1999) wanted to say was that social settings cannot be reduced but the wholeness is needed to take as such, and generalizations are not easily to be drawn.

3.2 Course of Events

In order to provide successful course settings the Action research (AR) approach was used. Existing literature guided the design of the course and the interviews and experiences of the elderly were used as a voice from the field providing practical, "what-is-needed" knowledge and collaboration. Feedback received from the first course also functioned as a valued source to improve the second course. Next the timeframe of the research and rationale of the events is described and placed into the AR-cycle (Figure 2).

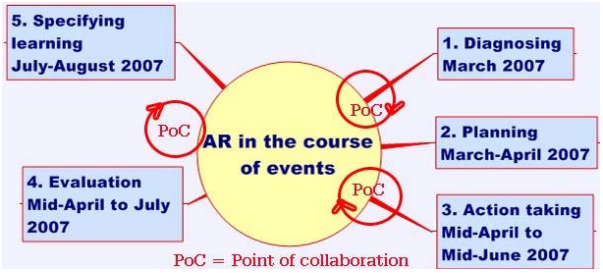

Figure 2. Course of events in Action research cycle with points of collaboration.

3.2.1 Diagnosing

In March 2007 we made a small literature review and telephone interview of the participating elders, where expectations, previous skills in computer usage and wishes for learning were asked. The rationale for the courses lies in the aims of the project (ICT to support abilities of elderly people in social settings) and in the groundings given in the Introduction. The problem was how to teach elderly in the usage of computer and Internet in a way that their needs and abilities are taken into an account. We also used pre-knowledge from Senior's Club (Eronen et al., 2006; Naumanen and Tukiainen, 2007). Diagnosing also constituted the first point of collaboration, where small scale AR-cycle was implemented.

3.2.2 Planning

During March and April the course was designed according to the guidelines provided by existing literature and the knowledge gained through interviews. In fact, the pre-interviews should also be placed in this planning phase. It brings in the collaborative approach of planning and indicates topics of change (here the change can be interpreted as learning that is wished to take place).

3.2.3 Action Taking

From mid-April to mid-June we organized two computer courses using the framework created in planning phase. Instructors made observations and diary-notes on the run of the courses, and if needed, some practices were changed (like pace, materials, etc). This formed the second point of collaboration.

3.2.4 Evaluation

From mid-April to July the process of evaluation was on-going activity. Observation was used during the both courses and a *WWW-questionnaire* was devised to collect the feedback. WWW-questionnaire was answered by 23 seniors. The answering percentage was about 79. Questions asked were participants' opinions about the course settings and content. Most questions were open (11 out of 15). First parts of the questionnaire utilized the same structure that is used in our department to collect feedback from the courses held, while rest of the questionnaire concentrated covering the things that were taught and whether they were internalized or not by the seniors. As the data from course 1 was used to improve the planning of second one, this was also a point of collaboration.

3.2.5 Specifying Learning

Right after the courses the WWW-questionnaires were analyzed. In July and early August the results were combined. As the sample size was that small, no specific analysis tools were used but instead, results were tabulated using Excel. The results are presented in the next section.

4. RESULTS

4.1 The Course Settings

Overall, the courses were appreciated by the elderly people. 65 % (15 out of 23) of the participants were very satisfied with the course, while 7 persons find it pretty satisfying and one as "ordinary" course. The

course was also regarded as useful and interested by the majority. In Figure 3 there are assessments of the course settings, ranged from failed (0) to excellent (3). Even though the pace was tried to keep as slow as possible, some regarded it to be too fast. Number of participants thought to be pretty good. Anyhow, the amount of 14 participants in one course approaches the upper limit (to keep the atmosphere cozy and supporting). Teachers/facilitators were liked a lot and considered as domain experts. Materials and home tasks, instead, were given good notes, too, although they were not delivered that much.

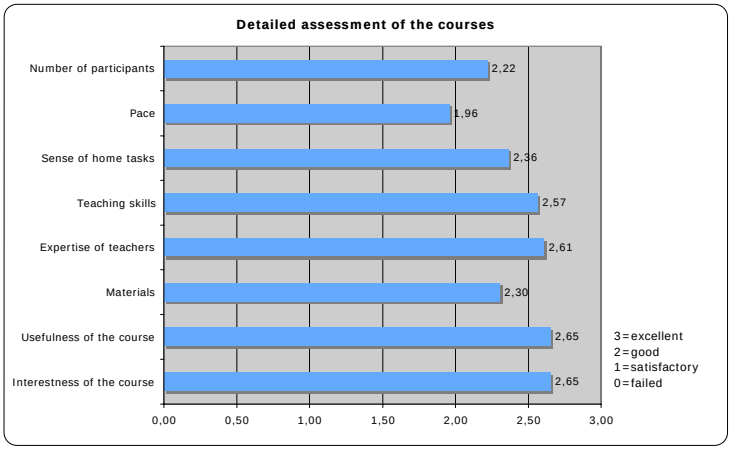

Figure 3. Assessment of the courses

4.2 Self Assessment

One part of the WWW-questionnaire asked participants to conduct a self assessment about the things (covered during the course) and whether they command them or not (*closed questions*). As there is no pre-data about what they actually knew before the course, the data is only indicative, not generalizable as such. What we may see is that e.g. learning/remembering terminology was quite hard (27 % knew the difference between search engine and web portal, for example). Figure 4 lists the things asked and assessed by the participants. Completely or nearly completely commanded issues involved: Information search, file opening and bolding & italics in using Word (over 90 %). Sending e-mail, knowing what spam is, surfing the Internet, and knowing how to align in Word were commanded by majority, as well (80-90 %). Things not learned that well (under 60 %) included e.g. adding attachments in e-mails and/or Word, indentation and one's ability to advice other novices in computer use. As there were no "I do not know" choice to choose from, some may have turn their estimations into "No".

Open questions about learning were also included in the questionnaire. What the participants described to having learnt were e.g. e-mail, Internet, basics in computer usage (more than one similar answer). Other single things mentioned were getting to know the terminology, drawing, file handling, using mouse and finding new features in Word. Many answers were very short in their nature, and using interviews would have given greater data in this case. Same things, however, showed up when asked about what issues need still rehearsal. Especially things connected to Files & Folders needs extra practicing, like information search, too.

Things that were covered too much or too little were also asked. Nothing was covered excessively and about half of the participants thought that there was enough of everything. More teaching and practicing would have wanted for example in case of files and folders and Internet. Suggestions for improvements included granting more time to overall course and organizing a continuing course. According to some single answers teaching should be more commanding, every participant ought to have an own computer to use in the classroom and more recap could be used.

In the future, the participants shall continue using the computer and Internet at home. Mostly said purposes were Internet and information search, keeping in contact with relatives and friends, using web-services (banking, authorities), doing word processing and for fun and gaming. Couple of participants also wanted to take extra courses in computing later on.

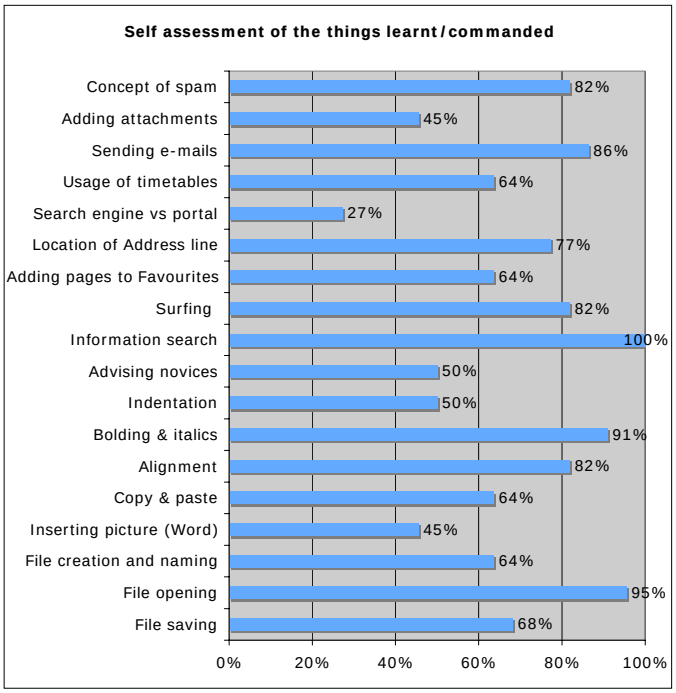

Figure 4. Self assessment on things learnt/commanded by the participants

4.3 Observations

Some common points of confusion were caused by the odd terminology that tried to be kept in minimum. Elderly many times confused for example the address field of the browser to that of search field, and many times (for some) talking about and writing address what that of their postal one. Majority of the learners made their own notes (ordered lists of steps to be taken) and also asked questions to ensure that s/he had understood the things correctly. Humor was a heart of the things gone smoothly and the group spirit was great. There were mostly one person per computer, but some couples wanted to do hands-on exercises in pairs. Teaching focused on practical doing and tried to bring as much as recap as possible. Still, in the given tight time table, amount of lectures was all too low. We only scratched the surface, but inferred from the feedback, we managed to gain our goal. Also, from those 50 % who said to be willing and capable of teaching other novice users, we may develop/get peer tutors for further computer clubs and/or courses.

From the feedback of other tutors, the time dedicated to the course was all too short. Teaching file structure was a biggest challenge. Using the mouse posed some problems, especially in selection of smaller target objects. As total, the participants of our course were very persistent, good humoured and engaged in things with all their hearts.

5. DISCUSSION

Teaching elderly people to use computers and Internet is a hard but rewarding task. What are the learning habits and expectations – among other things, may differ from those of the younger ones. This was clearly reflected in their self assessment of the skills, which were not that high even in case of simple tasks or definitions and overall satisfaction of the course, which was high. Even little things learnt may thus give much for the elderly, instead of a need to command all things covered.

We tried to cover the good instructions given e.g. by Jones and Bayen (1998) and Dickinson et al. (2005) and augment those with our own findings, i.e. to localize the instructions, as there may be, as I claim, some cultural differences about how and what to teach for the elderly, too. We emphasized very personal and

tailored approach into teaching. The motivation was not a problem, as the seniors came to a course as volunteers and had a good knowledge of what we will cover during the course. Push into a course was encouraged by the children or grand children of the participants, and many highlights were much to do with this social aspect of computing (sending e-cards and e-mail) and finding interesting senior-targeted information. Teaching was tailored and improved on a run, and making questions was strongly encouraged.

With a little more training and practicing some of the seniors may themselves become peer tutors/guides of other elderly people. Some had already promised to act as one among their friends. Thus the effects of the course are very likely to spread further than to the participants. Peer tutoring can be a motivating factor, and favored by the elderly. Other ways of guiding and facilitating elderly, to support their cognitive processes, common interest/uptake of ICTs and (thus far) known features include for example taking a personal stance (each student is an individual), using of more than one teacher to see that everybody keeps up the pace, if not, then it is the pace that is slowed down, using the sense of humour and showing that teacher is a human and prone to make errors, not remember and so on.

It is also good to take voices heard from the field: examples, ways of doing things as cited by seniors themselves. This gives them feelings of command and knowledgeable, and shows all that their knowledge and instructions are valued. Pace can never be emphasized enough. As cognitive slowing is a fact, and working memory needs more and more support, provide time for activities and if possible, do not cover more than 2 bigger things at the same lesson/time. Time for practice and questions is good to left enough, also those questions that elderly want to ask by themselves. The first encounter with computers and Internet should be positive, and in case of any errors, they are good to explain and get elderly confidence that the computer neither bites nor get broken – you need to be an expert to make it do such.

We found out that they are very personal and little things that make a big effect. Calling people by their names, giving credit to their learning and setting focus on interactivity of the learning create a good climate for learning. At a same way than we try to include elderly people into the very process of design (systems and software) we needed to take them into course design, as well. Then we might better harvest their prior knowledge and expectations, which, on the other hand are hard to explicate for some, for example a novice hardly know any possibilities what Internet can provide to him/her. As Newell and Gregor's (2002) *User sensitive inclusive design* could well be adapted to course design, too, as this sensitiveness component seems to accommodate the "personal touch" and tailoring of ours.

Some limitations of this study are that not all participants filled out the questionnaire and that we did not make similar kind of "what is commanded" enquiries before the course to make good comparisons and thus get more valid data about their learning during the course. Taking ICT as a self evidently good and useful thing in the lives of elderly is also issue worth pondering. It may not necessarily be so. As courses of any kind are very situational, tied into certain social context where learning takes place, the results as such are not generalizable, either. As such, anyhow, they can give good paths to follow for those, who have decided to work for our own future. Goals and targets may change but certain values stay. Also time dedicated to a course was all too short to cover things properly.

Some lessons learnt during the courses will be utilized in Seniors' club and its derivatives in Savolax area during the fall 2007. From this interactive and tailored learning approach, we can sew different gloves to fit many hands and minds. Each course and encounter with elderly learner is also a learning situation for the teacher him/herself. As Mannova and Bicik (2006) say, it involves continuous understanding how learners reach, interpret and create meaning from various activities and also not being afraid of experimentation and adaptation of new approaches. I am sure that we implemented a good seed for further learning and using Internet as a tool and means to keep in touch with their relatives and friends. In future, also cultural comparisons would be an interesting topic for further research, and as Xie (2007) pointed out, it is not only short courses that we need, but more club-based activities for continuing training with one's peers.

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