



ICT and lifelong learning for senior citizens

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Abstract

Currently an effective and adequate use of new technologies appears to be a key element in knowledge-based society. This requires capabilities, which discriminate large social classes, in particular, the elderly. Opportunities to develop and maintain these skills should be given to senior citizens through appropriate local lifelong learning programmes, which may help the elderly acquire awareness of innovative processes and become or remain active participants in the knowledge society.

This work describes the approach and the results of a targeted course based on social networking - considerations on how to design such learning initiatives and to orient further research activities on this issue are given.

1 Introduction

Individuals are required to adapt themselves to continuous changes affecting everyday life. Lifelong learning is essential to catch opportunities and to face its challenges.

Elderly people are still able to acquire and develop a wide range of knowledge and skills that make them feel more prepared to participate in current innovative processes. Development of ICT skills has become fundamental during this crucial age since it can empower third ages and reduce the risks of exclusion from social, economic and cultural life. These skills can be acquired in the context of traditional learning initiatives, namely onsite activities, but also through more targeted learning courses based on social networking.

An initiative of the latter type was designed and run by the Institute for Educational Technology of the Italian National Research Council (ITD-CNR) in the framework of the experimental project “Informatica per la terza età – ICT for the third age”. The course outcomes related to the acquisition of ICT skills have been investigated to detect attitudes of the participants and analyze long-term follow-up.

2 The learning activity: context, aims and methodological approach

The online learning initiatives were organized in the context of an experimental five-year education programme of Liguria Region aimed at introducing a large number of over-60s to the basics of ICT. It envisaged a mixed learning path of onsite and distance activities. Distance activities could take the following forms:

- Computer-assisted training, to be carried out autonomously at home and based on the reinforcement of classroom learning;
- online collaborative learning, aimed at an in-depth examination of some topics related to the use of Internet, and targeted at a limited sample of elders that resulted totally autonomous in the use of ICT.

This second form named “I3E-learning” (Trentin, 2004), allowed to determine to what extent social networking-based online learning could be considered a complementary way of learning with respect to traditional classroom sessions.

Participants in “I3E-learning” were selected among successful attendees to previous theoretical and practical training course on ICT basics. Participants were indicated by their respective classroom teachers on the basis of the satisfaction of a number of conditions, such as basic understanding of the use of e-mail and Web browsing, and availability of internet access at home. The recruited participants were then assigned to two separate online learning

groups of about twenty persons, each coordinated by an online tutor, fulfilling the criteria of homogeneity in age and gender.

The course was aimed at developing two specific skills which are essential to a social net worker - the optimum use of search engines for information and resource retrieval; the establishment and management of web services based on social networking.

The learning environment used is based on social networking tools that, besides distributing learning materials, ensure one-to-many and many-to-many asynchronous communication between tutor and participants and among participants themselves. Within "I3E-learning", a portal offering free spaces and services was chosen to make participants acquainted with a tool for online communities management that could be used autonomously and at no cost after the course.

The methodological approach adopted in this course was based on an online learning strategy characterized by a strong network interaction between all actors (tutor and group of participants). The tutor via an asynchronous computer conferencing service initiates each learning unit, and a message asks participants to do one or more exercises. Time allowed for the learning activity is unlimited and each participant may return results autonomously or in cooperation with other attendees according to the dynamics based on self-regulated learning, self-help relations and peer-to-peer collaboration.

3 Monitoring and evaluation

Monitoring and evaluation processes were carried out by online tutors and ITD-CNR researchers, and were aimed at:

1. Detecting the achievement of the expected learning objectives,
2. Estimating levels of participation and involvement of participants in the proposed online activities,
3. Measuring the degree of satisfaction and general attitude with respect to the learning methodology adopted to run the online activities.

Investigation on the achievement of learning goals and on participation was based on an approach already tested in other online courses (Benigno and Trentin, 2000), focused on analysis of messages and artifacts produced by participants (in this case exercises) and on the level of individual involvement shown in group interaction.

Structured grids were used to determine the correctness of exercises and to classify messages; an incidence table (Mackenzie, 1966) allowed to analyze reciprocal interactions and hence define the degree of centrality of communication within online groups.

The main tool used to detect participants' attitude was the satisfaction que-

stionnaire delivered at the end of the course. The obtained information was integrated with data from participated observation of participants' interactions and of the more personal messages between the tutor and each participant.

In the following section the experience evaluation conducted during and at the end of it, is briefly described in terms of outcomes of the three aspects.

3.1 Participants' learning achievements

In relation to the assigned tasks the assessment of participants achievements took into account the level of correctness of their production. As illustrated in Figure 1, about a quarter of participants completed all exercises correctly; one third completed three-quarters without mistakes. Thus, more than half of the total number achieved good results.

From the point of view of complexity of the exercises, about 60% of participants were in the medium-high band, while about 70% completed correctly the exercises considered essential to certificate the achievement of training goals of the online course.

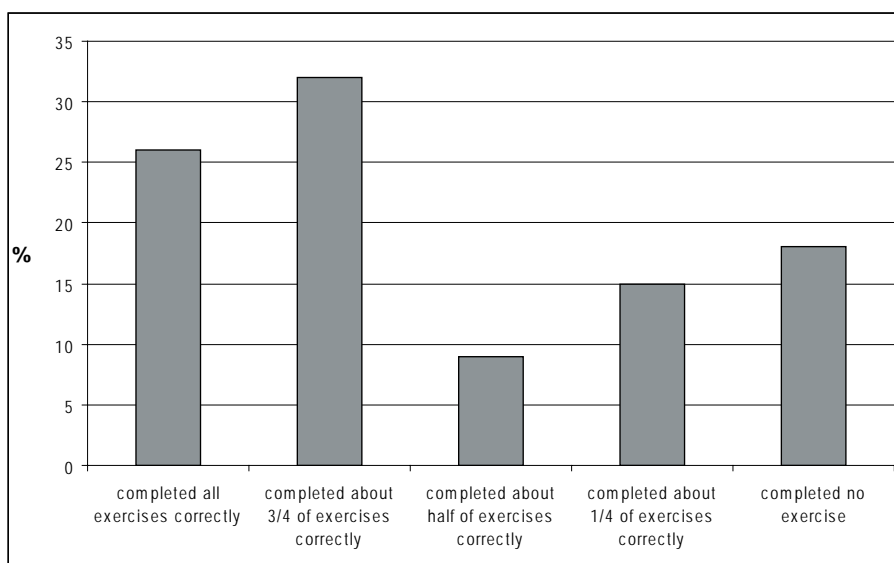


Fig 1 - Percentage of distribution of correct exercises

Hence checks show that the acquisition of e-learning contents was very satisfactory. However, given the particular conditions in which the experiment was conducted, caution is needed. For example:

- although varied (different entry-level skills, different cultural backgrounds, etc.) the considered sample was small;

- the technological nature of the content lends itself well to training in e-learning courses. Similar results might not be obtained with the same group and a different subject;
- the basic notions on the use of network tools and services then used for online interaction was acquired during a preliminary on-site training;
- people were recruited during a pre-screening by classroom teachers and showed a good level of autonomy in computer use.

3.2 Participation and reciprocal interaction

Analysis of messages shows a fairly high level of participation of both groups though with different dynamics. To analyse in greater detail the dynamics of interaction that developed within each learning group, two separate incidence tables were compiled.

An incidence table is a grid with sender/receiver (S/R) double entry (Mackenzie, 1966). It is used to record interactions among participants in a discussion group.

Supposing that there are n attendees, the table will measure n by n , and each cell will represent the number of times that each participant has interacted with another group member. The sub-totals of each column represent the number of message emissions, and the sub-totals of each row the number of receptions. The table's total represents the overall number of communications within the group.

Applying two different algorithms to the incidence table yields the centrality index, which measures the communication around each participant, and the participation index that measures the communication distribution within a group.

In the examined case, only messages referring to specific participants (e.g. quoting either the names or part of a message, etc.) were considered in the incidence table. Either messages sent to the tutor or socialization messages sent to the whole group were not taken into account.

Graphic projections have helped to understand to what degree communication was either centred on few individuals or distributed more or less equally within each group.

Graphs of Figure 2 and Figure 3, show that the number of communications were on the whole reasonably distributed throughout group 1, even if more centred around four participants. In group 2 there was no significant interaction between participants since one-to-one communication between participant and tutor mainly aimed at completing the task at hand, was preferred.

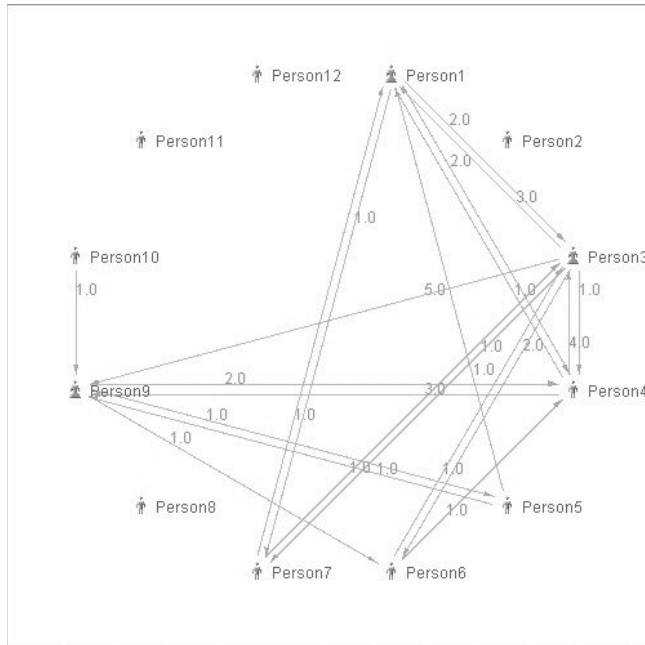


Fig 2 - Reciprocal interactions in group 1

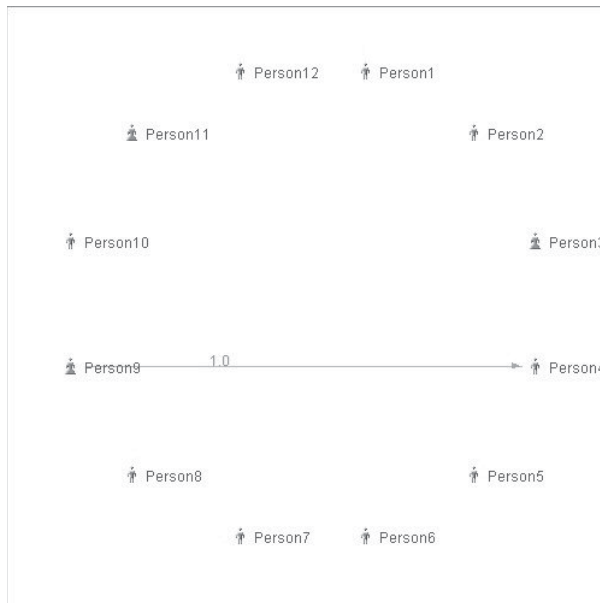


Fig 3 - Reciprocal interactions in group 2

Diversity in communication dynamics within the two groups (more “horizontal” in the former and more “vertical” the latter), was affected by the teaching/learning strategy adopted which played a part in such marked diversity rather than by composition of groups, which were homogeneous and started out from almost identical conditions. In fact, a strategy based on exercises tends to give priority to one-to-one communication between the tutor who assigns the tasks and the single participant who completes them, despite a many-to-many horizontal communication triggered where relations are based on self-help.

The presence of the second type of interaction in one of the groups can be influenced by individual factors such as the group members’ propensity for online socialization, the tutoring style or the tutor’s ability to raise participants’ interest and to facilitate socialization and collaborative interaction within the learning group.

3.3 Level of satisfaction

The general attitude of participants towards the online course and the learning methodology adopted in online activities, measured by a satisfaction questionnaire delivered at the end of the course, was very positive.

The feeling of disorientation and mistrust towards computer-mediated communication in the initial stages and attributed by participants to difficulties in relating to people they did not know or to lack of familiarity with technology, changed radically at about two-thirds of the way through the course, as shown by 78% of participants who expressed high satisfaction. Instead, average-high and average-low satisfaction were expressed respectively by 10% and 8% of participants. This positive judgment was accompanied by the desire to attend similar online courses to master other ICT tools.

4 The impact of learning activities

The survey on follow-up, conducted six months after the end of the course, allowed to understand to what extent knowledge acquired during online activities was applied to everyday life. The semi-structured questionnaire used to check the application of these competencies was aimed at detecting:

1. frequency of Internet use;
2. type of Web use;
3. type of interpersonal communication used;
4. personal impressions on how online activity affected their everyday life.

The use of e-mail to send the questionnaire provided a preliminary information on follow-up - questionnaires handed back and duly filled-in by 76% of participants who had successfully completed “I3E-learning” provided a further

element of the effective use of internet, or, at least of e-mail.

Quantitative analysis of questionnaire answers (Table 1) shows that, on average, more than half of the total number of participants connect several times a day and that almost all browse the net regularly.

Table 1 - Quantitative data from the follow-up questionnaire

<i>Frequency of Internet use</i>	
More than one connection a day	58%
At least one connection a day	31%
At least one connection every 2 or 3 days	12%
<i>Type of Web use</i>	
Regular browsing of the net	85%
Construction of a personal website	8%
<i>Type of interpersonal communication used</i>	
Regular use of e-mail	100%
Use of social networking services and tools (online communities, social softwares, blogs, forums, etc.)	35%
Regular use of chat rooms	12%

Combination of data given in Table 1 with the open answers of participants shows that the Web is mainly used to access news portals (online newspapers, magazines, newsletters), local authorities or government bodies websites, cultural, sports or voluntary associations websites, also targeted for the third age or concerning health, online tourist agencies, websites of museums and libraries, and to use financial web services (stock exchange, banks, finance).

As to interpersonal communication, e-mail is the chief means used to correspond with far friends and relatives, and to keep in touch with former course companions. It is worth noticing that about one-third of participants uses social networking tools regularly to manage communities similar to that used within the course “I3E-learning”, and that a small minority created a personal website.

Finally, results of follow-up account for a continuity between the training period and habitual use of acquired knowledge. As with other age groups also third age users confirm what had already been found in the application of this methodology.

5 Discussion of results

The results of the analysis of our online learning initiative targeted at elders, along with those already present in specific literature, allow some considerations that might improve the design of similar initiatives and initiate new research activities related to this issue.

The great time availability that characterizes the elderly along with the absence of spatial and temporal constraints peculiar to asynchronous communication, allow high flexibility in the participation to online learning activities. On the other hand, the elderly, compared to younger persons, need direct personal interaction since they are unfamiliar with technology tools and are emotionally and socially weaker. Thus blended solutions, in which periods of e-learning alternate with onsite activities, seem more convenient.

As to the characteristics and with respect to younger participants, the elders have different response time, cognitive skills, needs and motivations in online courses. The complexity of these factors should be taken into account in course material design, in online activities and learning strategies selection, in group forming and tutoring style to be adopted.

As it happens in adult learning, elders should acknowledge the intrinsic value of the suggested learning path. Learning must be contextualized and close to their own experiences and everyday life. The background of older persons is varied and remarkable; the richness of their experience should be promoted and enhanced through self-regulated learning to make them feel responsible and autonomous, and through collaborative learning too, to promote knowledge exchange, sharing and construction.

On the grounds of the above elements, designers and online tutors who organize and run initiatives targeted for the third age, should undergo specific training (Knowles, 1984). Such programmes should be based on a close match of e-learning design methodologies, network groups management and the most recent theories of andragogy.

Further research work on this topic could analyze larger samples, widen or diversify contents by tackling other subjects, try out different learning methodologies.

Concerning the latter point possible methodologies based on the most recent lifelong learning theories, if applied to social networking tools could generate virtuous learning situations for elders' learning. For instance, autobiography as a learning method (Cambi, 2002) has many potentialities in transformation and restructuring processes of the self, more evident during adolescence and mainly during the third age, when this practice becomes essential to attribute a sense to one's own life history and to reorient it.

6 Conclusions

As confirmed by recent studies (Selwyn and Facer, 2007), the availability of a personal computer, web access and ICT are indispensable elements and yet insufficient to fill digital divide. Currently an effective and adequate use of new technologies seems a key element to survive in a knowledge-based

society; nevertheless most thirdagers do not possess the required skills. The diffusion of initiatives like the one described in this article could contribute to close the technological, socio-cultural and inter-generational gap that affects especially the elderly in the knowledge society. In fact, the correct use of new technology is not just a matter of technical skills, but it entails the sustenance of self-identity (Martin, 2007) or its reconstruction, self care, social relationships, dialogue with younger generations.

As shown in the present study, basic literacy through onsite training is the first necessary step to spread ICT culture among third agers. This first phase should prelude or alternate with an in-depth online course where ICT is seen both as the content of training and as a learning environment. In such an environment, each learner acquires awareness, creates new horizons of sense, share and negotiate them with others through social networking. In this way they progressively achieve mastery thresholds that make them digitally literate, and hence more able to participate in and contribute to innovation processes taking place in present society.

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