

# Learning by Peers: an Alternative Learning Model for Digital Inclusion of Elderly People

Márcia Barros de Sales<sup>1</sup>, Ricardo Azambuja Silveira<sup>2</sup>, André Barros de Sales<sup>3</sup> and Rita de Cássia Guarezi<sup>4</sup>

<sup>1</sup> Federal University of Santa Catarina (UFSC), Brazil, [marciab@inf.ufsc.br](mailto:marciab@inf.ufsc.br)

<sup>2</sup> Federal University of Santa Catarina (UFSC), Brazil, [silveira@inf.ufsc.br](mailto:silveira@inf.ufsc.br)

<sup>3</sup> University of Brasilia (UNB), Brazil, [andrebd@unb.br](mailto:andrebd@unb.br)

<sup>4</sup> Institute for Advanced Studies, Brazil, [ritaguarezi@iea.org.br](mailto:ritaguarezi@iea.org.br)

**Abstract:** This paper presents a model of digital inclusion for the elderly people, using learning by peers methodology. The model's goal was valuing and promoting the potential capabilities of the elderly people by promoting some of them to instruct other elderly people to deal with computers and to use several software tools and internet services. The project involved 66 volunteering elderly people. However, 19 of them acted effectively as multipliers and the others as students. The process was observed through the empirical technique of interaction workshops. This technique was chosen for demanding direct participation of the people involved in real interaction. We worked with peer learning to facilitate the communication between elderly-learners and elderly-multipliers, due to the similarity in language, rhythm and life history, and because they felt more secure to develop the activities with people in their age group. This multiplying model can be used in centers, organizations and other entities that work with elderly people for their digital inclusion.

**Keywords:** Learning by peers, third age digital inclusion.

## 1. Introduction

Population aging is a worldwide phenomenon. Developing countries are going through an accelerated demographic transition process, due to the gradual increase of life expectancy and the decrease in the birth rate. These factors are associated to urbanization, nutritional quality of food, improvement in work conditions, sanitation and dwelling, with a relative improvement in quality of life. Besides those factors, new scientific advances and discoveries in the health and technology areas contribute to the population's longevity.

According to the Institute for Applied Economics Research [1], the number of elderly people in the population has been growing and will still grow worldwide. In Brazil, this increase has modified significantly the profile of the populational pyramid, causing what the scholars call rectangularization. These demographic projections

indicate our elderly contingent in 2025 will rise to 32 million, putting Brazil in sixth in the world [2].

According to [3]; [4]; [5]; [6] the elderly person has the interest and the possibility to achieve a certain autonomy with the computer, and the contact with computers can propitiate some benefits, such as better social interaction and mental stimulation. However, promoting the elderly inclusion in the digital world context demands, above all, considering their language, life history, cognitive, emotional and physical alterations, among others. It is also imperative, besides the mentioned characteristics, to mold accessible teaching methodologies and to map the guiding and facilitating pedagogical principles for the elderly learning.

Cognitive and emotional alterations come from age advance and manifest in several forms. After the identification of these changes, there must be more directed studies that assure the accessibility to the computer and its communications and information tools by the elderly user.

Aging defies easy definitions, at least when it comes to biological terms. Aging is not the mere passing of time; it is the manifestation of bio-psycho-social events that occur during a period of time, as [7] comments. There are significant evidence of decline related to aging, and alterations in the cognitive process are the most relevant. As people age, there might be alterations such as: decrease in retaining short-term memory, visual acuity, hearing, fine motor coordination, locomotion and others. Aging cannot be associated only to chronological age. According to [7], to define this stage in life it is also necessary to consider the different rhythms in biological aging, which vary from person to person, as do potentials for each person in advanced age.

Comprehending the cognitive perspective as to the elderly user infers directly on the building time of a knowledge, since aging may or may not be accompanied by the decrease in some cognitive functions. Some life habits might interfere and accentuate the decrease in those functions, such as contact/life in stressful environments, lack of physical fitness, excessive workload, isolation, depression, stress, improper use of medication and emotional or nutritional problems [7]. Although in the fourth or fifth decade of life the cognitive alterations do not compromise the individual's daily life, they evolve extremely variably among people. At that age, the responses to stimuli become slower and less precise. Those effects tend to appear as tasks become more complex. Elderly people may also present difficulty in focusing, retaining information in the work memory, rapidly processing information, formulate conclusions and make interpretations, especially when encoding and understanding certain speeches [7], [8].

In elderly people that do not present the risk factors mentioned for cognitive deficit and compromising of their activities, [8] and [7] highlight that the cognitive functions remain intact and suffer virtually no decrease. They stress that the performance related to the ability to read and write remains unaltered, and the vocabulary may even increase.

Researches [9]; [7] point out memory alterations as the most frequent complaint from the elderly, an obstacle usually associated to the difficulty in remembering names, phone numbers, texts and places where objects were put, which does not imply in significant decreases. Associated to the issues above, for aging people, there are also the ones related to self-esteem and digital inclusion.

## **2. Self-Esteem and Digital Inclusion**

For the elderly person, self-esteem might oscillate constantly. Among the factors that promote self-esteem is, mainly, good physical and psychological health, since it works as a defense and confrontation mechanism. Retirement can favor isolation and loneliness, in a moment when feelings of loss, insecurity and sadness penetrate the individuals. For the elderly, this change brings with it a reduction in daily life activities, and can make them unmotivated, apathetic and with a reduced self-esteem, favoring social isolation. This attitude may cause future focus, reaction and coordination problems [10].

According to [11], there is an important relationship between self-esteem and technology, since becoming autonomous in a new skill can increase self-esteem, defended by the author as a factor that plays a powerful part in the process of appropriating new technologies by the elderly. Thus, it is fundamental to consider all the aspects that might influence the elderly person's interaction with the communication and information tools available on the Web as ways to digitally include that public. Communication is a fundamental factor to keep and increase the social circle and, therefore, to elevate self-esteem. Those factors justify the importance to create interaction alternatives to insert the elderly person in activities such as the use of computers and its communication and information tools, that stimulate, integrate and can expand their life goals, also approaching them to similar technologies, like cell phones and ATM machines, making their utilization easier.

A survey done by the American Association of Retired Persons [12] reveals that the population over 50 years old searches for information on health, life quality, news, finances, retirement plans and education. In the entertainment category there are games, relationships, travel and sports websites. We first understand this contact with the computer allows the elderly person to meet other people and to connect to the cyberspace, and it can offer a new knowledge network and increase their social interaction and independence, through communication, information and interaction tools, further contributing especially to their emotional and psychological welfare.

## **3. Multipliers: Peer Learning**

The multiplier is an individual who acts trying to develop their interpersonal relationships, as to cooperation and motivation [13] According to the author, the multiplier is the student-teacher that performs action roles along with their classmates (peers), allowing them to also think about their practice in a systematic way.

According to the documents from the Health Ministry [14], the desirable multiplier profile is initially identified with the interest and availability to perform the part of course instructor/facilitator. Previous experience might contribute, but it is not fundamental considering the attributions of most interested people in being multipliers. Another relevant characteristic is initiative, the ability to organize, disseminate and motivate workers to participate in the courses. Good ability for articulation with other areas in the institution and other institutions, and easy interpersonal relationship.

Thus, to achieve this research's goals, the authors propose using, in digital inclusion programs for the third age, the role of the multiplier as a social agent/actor to replicate their acquired knowledge to others, based on the concept of peer learning, in which individuals with similar social-cognitive profiles play the part of facilitators in the teaching-learning process. However, this must be done with a didactic background, that is, with material that gives pedagogical support to a certain theme. Besides, the multiplier must have some attributes, such as: initiative, motivation, good will and selflessness.

We must also consider social and psychological factors that might influence the elderly participation in educational programs and in learning activities, such as: their taste for learning activities that encourage openness and sharing, both essential to the participant's satisfaction; the taste for programs and activities that stimulate their interest in society and provide meaningful discussions in which they can express their ideas and points of view; activities that respect their physical limitations, including sight, hearing and mobility that minimize barriers such as time, place and costs [15].

To complement the exposed, [15] says peer<sup>68</sup> learning has been the base of programs aimed at elderly people, highlighting that these programs have a feature that distinguishes them from other adult education programs: the activities are organized and lead by volunteers.

Peer learning suggests also that educational activities should be done in order to facilitate or encourage the student-student interactions, which require the involvement from all participants in planning and executing the activities.

However, [15] also highlights the importance of diversity, since the elderly are different in several contexts, such as: family, work, health, education, income, social experiences, history and individual abilities. It is hard to describe all elderly people as "peers", and ever harder to fit them into one category, like above 65 years of age or retired. Those denominations only hide diversity, creating a false group identity; that is, if diversity is not acknowledged, the educational activities will not use the various and fascinating ways through which individuals learn and interact.

#### **4. A Case Study**

The Center for Third Age Studies at Federal University of Santa Catarina (NETI/UFSC) has as its goal to make available to the community their knowledge about Gerontology, developing studies and researches and inserting those people in the academic world as individuals under transformation and society transformers. It excels in valuing the potential of the socially productive elderly population, the promotion of knowledge-building elderly people and it transmits information to the society, promoting an educational process in which the elderly people themselves are agents in the story. NETI offers several activities and courses aimed at the elderly, such as: training gerontology action monitors; personal growth groups; storytellers and language courses, among others. The center receives today around 600 elderly people.

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<sup>68</sup> The word 'peer' suggests individuals similar in position, age and interests, fitting them in the same generation or social level [15].

In the past years, NETI/UFSC registered about 150 elderly people interested in learning computer and Internet skills. They also verified that some students who took computer classes outside NETI complained about the rhythm and heterogeneity of the classes, varying from the young to the elderly. Consequently, some of the elderly students could not keep up with the group in which they were inserted, making the situation embarrassing and leading them to abandon classes.

Seeing this difficulty, in March 2003 we started the extension project entitled "Internet workshops for the third age", at the Computer Science and Statistics Department in UFSC, with NETI's support. This project extended for two more years, receiving about 60 students in total.

During the time the workshops were given, we observed some elderly students, by their own, helped each other. That happened when they noticed a class peer was having some difficulty/doubt or when they were asked by their peers, being always ready to support them, regardless of interference from the workshop teacher. This procedure gave the impression that there was a better understanding among them, because of the similarity in their life history, rhythm and language.

The reported experience gave an impulse to elaborate a study, in mid 2005, that intended to work with elderly multipliers and achieve an even larger public. We had the goal to capacitate elderly multipliers because of the ease in communication and learning among peers with the same characteristics and age, since the learners felt more comfortable (less embarrassed) solving their doubts with their fellows. Another relevant factor we noticed during the workshops was the third age group's receptiveness as to volunteer work, seen by some as a way to feel useful and practice citizenship, helping the next person, which matches the fact they have time to do it. For such, we needed to capacitate them with basic computer knowledge so they could be multipliers and disseminate the knowledge learned to other elderly people, a vision that combines with the one from [15], when referring to peer learning.

This research is based mainly on the procedure orientation of action-research, a method that reunites several social research techniques, with which a collective, participative and active structure is established at the information capture level, thus requiring the participation of people involved in the investigated problem [16].

Divided into three stages, the multiplier model was applied from 2006 to 2007 in the Infocenter for the Third Age project (LSC/UFSC). In the first stage, the computer workshops were given by the project coordinator. An accessible learning material was developed for the workshops by the project team, in partnership with approximately 10 elderly workshop participants. This process evolved in three versions until it came to the final format of the accessible learning material, objective, concise and didactic for the elderly. The same procedure was done to elaborate a didactic-pedagogical support material for the elderly multiplier.

To capacitate the first elderly multiplier class, eleven elderly people were invited (two men and nine women), with ages averaging 60 and heterogeneous education levels (from elementary to college education). Of those, nine concluded the workshops and all were invited to become multipliers. However, only six had the interest and the desire to be volunteering multipliers.

In the second stage, other 22 elderly people (four men and eighteen women) were selected, with an age average of 66 and educational level ranging from elementary to college education). The differential in this second stage is that the elderly learners

capacitated in the first stage ran the workshops, now as elderly multipliers. To give them more confidence and better assist them, the elderly multipliers were divided into two groups to run the workshops, while they were observed and oriented by the project team. Of the 22 elderly learners, 16 finished the workshops. All were invited to be multipliers, but only eight had the interest to become multipliers.

Because of the help from the 14 elderly multipliers, capacitated in stages I and II, other 33 spots were offered in the computer workshops in stage III, in which five men and twenty-eight women participated, with an age average of 64 and educational level ranging from elementary to superior. 27 people concluded the workshops, of which five offered to be multipliers (18.51%). This figure is considered good by the project team, since in this stage no one was invited among the workshop participants to become a multiplier. In the three stages of the project there was an interest from people under 55 years old to be in the course with the elderly.

Each stage lasted three months and encompassed 28 workshops per class, with two two-hour weekly encounters. The workshops were done in the Knowledge Systems Laboratory (LSC), located in the Computer Science and Statistics Department (INE) of the Federal University of Santa Catarina.

The empirical technique of interaction workshops<sup>69</sup> was used, since it demands the direct participation from users in real or simulated interactions, in which they are observed doing a set of specific tasks. The technical team that followed the interaction workshops in the three stages of the project was composed by an ergonomist and a collaborator. With the purpose of capturing the elderly interaction during the workshops in a dynamic and static manner, the following instruments were used: video camera, photo camera, hand notes and questionnaires with open and closed questions.

Thus, the adoption of research-action in this study took place for its flexibility in the successive adaptations to the events, favoring and legitimating the observation process during the workshops. It is interesting to emphasize that in this work there was no elderly person with severe visual, auditory, cognitive, physiological, psychological or motor impairments, just minor decreases coming with age.

## 5. The Learning by Peers Multiplier Model

The proposal of developing a multiplier model using peer learning focused on the elderly is funded on a participative process that foresees andragogical, pedagogical, ergonomic, gerontologic and selfless mediation to achieve the social and digital inclusion of this public. For such, a multiplier model was elaborated, structures on five fundamental axis that integrate in a dynamic and flexible manner. They are: elderly multiplier profile indicators, training structure, learning material, methodology and evaluation, as described below:

1. **Elderly-multiplier profile indicators:** those are key elements that must be observed in the elderly-learner to identify them as a potential elderly-

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<sup>69</sup> Workshop as an interaction observation technique, different from interaction rehearsals for their informality and the number of participating users. In the interaction rehearsal, only one user can participate, while in the workshop there can be several users.

- multiplier:
2. Volunteer: indicates the wish to do something for the community.
  3. Cooperative: likes to help or support their peers.
  4. Engaged: assiduity in the workshops. Misses class only for a reason, since he/she considers participating in the group important for everyone's growth.
  5. Motivated: interested in always learning more than is being taught.
  6. Self-taught: likes to read, write, research various subjects.
  7. Optimist: does not get discouraged facing difficulties, always sees or tries to see the good side.
  8. Pondered: always expresses him/herself or explains in a calm manner; does not inhibit or embarrass the peer.
  9. **Training structure:** encompasses the teaching approaches that must be met; duration of hours/workshops; number of students per workshop; workshop teaching plan. The teaching approach guideline is andragogy and the constructivist principles from learning theories: affectivity, socialization regarding the person's reality, interest, meaning and previous knowledge are some of the principles that should guide the training structure. Training process also requires the development of memory facilitating mechanisms, such as metaphors and group dynamics.
  10. **Learning material:** All the material developed must be based on accessibility recommendations, avoiding the so called cognitive overload. The elderly-multiplier will have the same learning material than the elderly-learner plus the didactic-pedagogical support material. For such, two learning materials should be developed:
    - i. Learning material for the elderly-learner: it presents accessible and concise contents that respect the elderly person's characteristics referring to learning
    - ii. Didactic-pedagogical support material for the elderly-multiplier: it provides the didactic-pedagogical support so that the elderly-multiplier can guide him/herself when capacitating the elderly-learner (teaching plans; guiding document; workshop metaphors; action plans; role call for the students and reviewing activities).
  11. **Methodology:** this model's methodology excels in using group work methods, metaphors, empirical methods through individual exploration (planning projects and steps for the exploration and conclusion process); group exploration for the elderly-learner. The use of animation dynamics with the goal of developing participation and creating a trusting, fraternal and comfortable environment among multipliers and learners. Using introducing techniques to make the elderly introduce themselves and talk about their fears, anxieties and expectations. The methodology adopted here must above all respect rhythm, language, life history, as much as the decreases coming from age, such as: reduction in short-term memory, in psycho-motor skills and increase in response time, among others.
  12. **Evaluation:** We propose here the evaluation of the capacitating and process learning, that is, along the process, in order to improve it and support the elderly-learner's learning. Everything the elderly do must be assessed. The model proposes the results are evaluated by the project coordinators, through

questionnaires, interviews, videos; having the analyzed results, the teaching methodology and the learning material should be evaluated, to adjust the whole process and improve it to be used in future workshops.

## 6. Final Considerations

The proposed model is a dynamic orientation that allows the generation of activity, dynamics, according to different situations, which may be defined for another situation, goal or context that involves peer learning focused on the elderly. The model stages should be followed in sequence in a recursive manner, to allow adaptations when those are needed.

The work experience with the elderly learners showed to be fruitful: the Infocenter for the Third Age project capacitated 19 volunteering elderly multipliers in the three stages, being four men and fifteen women, with ages from 59 to 77 and heterogeneous educational level. The multiplier model using peer learning made the elderly learning easier and was considered applicable, a fact proved by the results obtained and ratified in the elderly people's reports, both learners and multipliers, and from the technical team's observations, that considered it satisfactory. It was also approved by the elderly people that became multipliers for later classes.

In this study, the computer use is used as an end task, but it is important to emphasize the model is applicable to other contexts that involve elderly people and peer learning. It is very important that the elderly multipliers are motivated with the activities developed, a factor without a doubt important for the success of the peer multiplier model.

The project gave thrust to a deeper research, which was the object of a doctoral thesis presented at the Federal University of Santa Catarina at the end of 2007, developing the final version of the multiplier model, using peer learning focused on the elderly, here presented briefly. With this work, besides contributing to a proposal for elderly people's digital inclusion, we hope to contribute to the aspects linked to their self-esteem, autonomy, legitimacy and, consequently, their social inclusion.

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