

Title

# **Training in the use of the Information and Communication Technologies (ICT), the remote education and telework for people with disabilities**

Authors

**Prof. Barés, Silvia Lidia**

Email [silviabares@tecnoeducativa.net](mailto:silviabares@tecnoeducativa.net)

**Lic. Litovicius, Patricia Carina**

Email [plitovicius@tecnoeducativa.net](mailto:plitovicius@tecnoeducativa.net)

**Tecnoeducativa** - Tecnologías educativas inclusivas

Ciudad **Buenos Aires, Argentina**

Email [Tecnoeducativa2009@gmail.com](mailto:Tecnoeducativa2009@gmail.com)

## **Abstract**

The use of the new Information and Communication Technologies (ICT) allows anyone with a personal computer connected to Internet to learn and work.

This technology must be accompanied by social progress and the proper use of computers for job development and education of all people, including those with a disability who use assistive technologies and other vulnerable groups that have the potential access to ICT. In this context, the proper use of individual skills for the job, with appropriate methodology, will convert your work in a rewarding practice for all individuals.

This work aims through the reformulation of existing knowledge to generate innovative proposals for its implementation: "Graphics Design and Creativity towards people with disabilities" and "Implementation of an Accesible e-learning Platform", with the ultimate objective to enable people can develop social skills in a more just society, accepting diversity and allow for the inclusion

## **Keywords**

Distance Education, Telework, Disabilities, Knowledge management, social and cultural progress, Tic's, Communication, Technology, Inclusion, Internet, Innovation, Graphic Design, Creativity, e-learning platform.

## INTRODUCTION

The emergence of the New Technologies of Information and Communication Technology (ICT) has led to the use of multimedia computer to store, process and distribute information for different purposes. The use Telematics in Education, to early the 80's, provides telecommunications integration with other means of learning through computers, the increasingly using personal computer and Assisted Learning for Computer (ALC) and multimedia systems.

In the case of those vulnerable minorities, people with disabilities, with difficulty moving or they require assistive technologies to use a computer, this environment is very favorable, being accessible and inclusive.

The advance of Internet and connectivity in educational institutions and households, and the arising Learning Management System (LMS), them allowing to people who own a personal computer with Internet access, develop activities for teleworking and distance learning.

Although technology advances, if not trained the teachers working with disabled people in the proper use of information technology for work and the education, these people do not will have access to new sources of development. This minorities to can telework, the work them will provide value to their efforts, and a path that them will open doors to join as social beings in developing their skills.

If knowledge is tailored to individual needs to find the best way to teach someone a specific concept, skill or task for work, considering how this person can feel, think, create and deal with the job from the place where it is. The successful experience for this person, also generates a contribution to a more just and egalitarian society, where everyone has the same opportunities. Adaptation to the referred is linked to the study of multiple intelligences [1], this theory states that people have the opportunity to learn through the use of different areas including intelligence, which they do able to perform specific tasks. The disabled person must this develop knowledge from that perspective, allowing his comprehensive progress as a human being with different abilities.

The development proposal arises from the vision to make changes that mean a educative technological innovation and business for the area of disability and inclusion. The implementation has distinct components from the same range of problems that people have over their lives. Since this involving not only include the problem of congenital disability but also the disabilities acquired in the course of life.

The premise that is done on technological innovation through educational computing, involves knowledge as a renewable resource that is not subject to diminishing returns, to become a source of dynamic development of companies and societies. This experience is feasible, through research and investment in scientific and technological development, taking into account that this situation gives a solution to the problem, which can be adapted to generate new experiences [2].

The term "innovation", which is discussed every where has become an emblem of modern society and the panacea for solving many problems [3]. The idea of this project is optimize the competitive position of companies through the incorporation of new technologies and different types of knowledge of people from his perspective.

The innovation process is a series of scientific and technological activities, along with organizational tasks, financial activities and commercial, potential actions that transform the production phases and commercial of the enterprises [4].

Beyond the individual skills of individuals, regardless of their challenges and the willingness to have to perform a task, it was found that the application of computer resources for people with disabilities allows them to stimulate learning through visual abstraction, spatial, attention, communication and other ways of perceiving that people possess.

These experiences resulted in a series of events that continue to grow in terms of generating social awareness of incorporation of teleworking and distance-learning disabled people to interact with society through the use of technologies to support independent living.

The following implementations were tested successfully in diferent educational institutions.

## 1. IMPLEMENTATIONS

### 2.1 Graphics Design and Creativity towards people with disabilities

#### 2.1.1 Justification

The use of technology and research on social problems are allowing society they can move in relation individual needs, and characteristics each community.

Educators and technology specialists, among other professionals have to bring their skills in 'people with special needs.

That knowledge must be accompanied by learning that relies on a theory of knowledge, which means to think the best way to teach someone a particular content and procedure. Bearing in mind as that person can feel, think, create and imagine, from their perspective, and how it operates in the surrounding environment.

Among the major research concerning education, we can cite Piaget and Paper, who despite having different ideas, they complement is their theories. Piaget's interest as an experimentalist and knowledge of being from itself, Paper perspective is based on generating proposals that relate to the educational environment, that can accommodate the learner to build that knowledge, with better opportunities, involving materials and appropriate cultural environments [5]. Papper's colleagues, such as Sylvia Weir, Paul Goldenberg, Jose Valente have advocated the use of computers for disabled, and the notion of "computer prosthesis" contributing to the enrichment of psychology and medicine.

Below are two proposals for its implementation, in order to include people according to their personal characteristics. We present the methodological components, benefits and evaluation of experiences.

This implementation can be done through classroom training, including distance learning. Reaching the potential output from sheltered workshops to work, the specialization of the person with disabilities who reached independently develops the use of telematics and training for teachers, educational institutions and companies that want to make use of this development.

### 2.2 Graphics Design and Creativity towards people with disabilities Prof. Barés, Silvia Lidia

#### 2.2.1 Purposes

- Resolution of problems from the operational complexity.
- recognize, describe, compare, discover and explore from the individual and group work.
- Implementation of the everyday with the contribution of different tools, using elements of the language resources and technology as ways of expression and communication.
- Preservation and enhancement of capacity towards the use of technology.
- Explore and develop interests, skills and social skills and cultural exchange

#### 2.2.2 Objectives

- Enable areas of study and research professionals interested in disability and inclusion. Keeping the record from educational-scientific-technological measures to promote favorable changes in inclusive practices.
- Develop competencies that enable people with specialized needs to be included in the workplace.
- Educate, encourage and promote friendly projects in the social-inclusive and productive, with short-, medium and long term. In promoting employment opportunities for persons with disabilities.
- Implement e-learning training at national, provincial and international, from the use of an accessible platform, mentoring for people with disabilities who so request.
- free software with ability to adapt to different types of disabilities.
- reduced costs of assistive interfaces to be implemented to the person with a disability to, to help his learn.

#### 2.2.3 Methodology

Training based on the use of IT tools, from graphics and word processing, graphic design-oriented. Divided into initial, intermediate and advanced, from:

##### 2.2.3.1 First level

Use of aids, aids, System dimensions. Writing texts with a choice of styles. Moving screens. Modification of existing drawings. Printing files, preparation for printing. Choice of priorities. Virtual presentations and printed.

##### 2.2.3.2 Second level

Operating graphic design programs. Design and create logos, brochures, pamphlets. Concept of corporate image, its component parts. Image capture, digital camera, scanner others. Photo editing and visual aesthetic criteria (basic). Virtual presentations and printed.

##### 2.2.3.3 Third level

Layout software. Layout. Layout. Knowledge of graphic printing. Treatment graphic images and publication of documents from the Internet. Books, magazines, newspapers, pamphlets. Treatment and mediting. The electronic book. Computer retouching. Different scanning products. Images and modifications to take into account the high image quality. Printing. Digital techniques. Effects. Filters. Layers.

#### 2.2.4 *Benefits*

- Use of computer resources appropriately.
- Development of collaborative strategies and process.
- Skills and competencies of social and cultural exchange.
- Proper safety equipment and computer room.
- Use of appropriate and updated software.

#### 2.2.5 *Evaluation*

It appreciates the commitment and performance in the project design process, finding the required information and implementation of knowledge acquired. The degree of responsibility in the task and responsibility for quality care.

### **2.3 Implementation of an Accesible e-learning Platform** Lic. Patricia Litoviccius

#### 2.3.1 *Justification*

The e-learning methodology for distance education is becoming the tool of technological excellence of training used by major educational institutions such as universities, schools, tertiary institutions, public and private entities. These institutions make use of virtual classrooms in an effective way to train their students and staff working at the institutions

Through the use of this resource has been reduced significant costs, such as rental space, and supplies required for classroom training. This methodology provides a decentralized training, with flexible scheduling for participants, and also affordable.

Most virtual trainings is conducted at present require a virtual campus. The user must have a computer with Internet access, website address where they are staying the course and a private password to access the virtual classroom

There is a software, which is a system that manages several virtual classrooms, called Learning Management System (LMS), Learning Management System, and there are many systems developed for this purpose.

In the last decade, Learning Management Systems have had a sustained growth due to high demand. This methodology, is generating benefit in the population to their training who have difficulty moving around, generating multiple chances to get a title which allows telework.

However, many people have no access to distance education because they have certain disabilities who require assistive technologies such as screen readers, used by blind people.

In this context, both the institutions that employ the services of e-learning as a community of developers and educators should have an understanding of how significant is the e-learning for people with disabilities, and on this basis to generate a tailored training its possibilities.

#### 2.3.2 *Characteristics of e-learning for telework*

To implement Accesible e-learning Platform , it is necessary to hire professionals with disabilities in proporsal inclusive, the application of lessons will depend on individual skills and abilities of these people regarding the usability in the training experience. This will open a new source of employment for those with mobility difficulties, with possibility of offering a service to the community from their perspective.

In addition, is to much more rewarding the beginning student to know that the project is inclusive, that technology is adapted and that the e-learning environment is focused on the usability of the participants. Consequently, implementation of a virtual classroom accesible, provides the possibility of entering a new field of education.

It is important to emphasize the importance of establishing links between the tutors and the students, creating collaborative activities, debates, and why not, a bond of friendship and camaraderie among participants, regardless of their individual characteristics.

### 2.3.3 Requirements for implementation

To implement a distance training with inclusive approach, its should analyze the feasibility of the proposal in terms of who meets these requirements:

- Accessibility and usability of the resources used
- Didactics in inclusive education
- Custom Tutorials
- Evaluation of user characteristics

#### 2.3.3.1 Accessibility and usability of the resources used

Accessability The LMS, contents, and activities that are made from the virtual classroom, require the following guidelines prepared by Accessibility Web Content Accessibility Guidelines (WCAG 2.0) [6]

- Perception of content; refers to information and the components of the user interface, how are presents, and the way that users can perceive
- Operable ; User interface components and navigation must be operable
- Understandable ; Information and the operation of user interface must be understandable.
- Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies

Usability.It refers to the ability of software to be understood, learned, used and attractive to the user, in specific conditions Use [7], is intended to be used by:

- Specific types of user / s,
- Tasks for which the system has become, and
- The context in which interaction occurs.

The adaptation of content and technology to be accessible, need to be evaluated by experts in accessibility and usability. Many people who use assistive technologies can assist in this task, and may be paid their task as telework.

#### 2.3.3.2 Didactics in inclusive education

Students construct knowledge through the organization and synthesis of information by integrating it with general research skills, communication, critical thinking and problem-solving. The new technologies are used as a tool to improve teaching-learning process.

One of the features of this proposal is mainly to outline the strategies well in advance and determine educational materials for training.

We must take into account the user profile, and the material must be adapted to your needs, allowing the participant interact with it.

#### 2.3.3.3 Custom Tutorials

The task of the teacher as facilitator is crucial in this experience.

Encourage participation is one of the strategies to avoid the isolation of students and not feel abandoned in learning. It applies the model constructivist learner-centered[8], the teacher as a facilitator of learning must:

- Know the interests of students and their individual differences
- Meet the changing needs of each.
- Know the stimuli of contexts: family, community, educational and others.
- Contextualizing the activities.

It is expected that students can work collaboratively using the learning platform technologies, through discussion forums promoted by the tutors.

#### 2.3.3.4 Evaluation of user characteristics

At the start of training should be performed an initial survey to assess the background and characteristics of course participants.

If there is any problem of the user, this should be evaluated by the team of implementers of the training to find a solution.

At the end of the course, a survey should be conducted with the following information:

- The contents were suitable for training.
- The proposed activities were interesting and served him for training
- The proposed time schedule for delivery of work were well planned.
- The mentor relationship was positive or negative.
- To what degree the training met the expectations of the course.

And during the course of training, the tutor must be aware of the work of the students, read what he set out in the forums and monitor access from the system administration tool.

#### 2.2.4 Causes in the defection of the students to virtual classrooms

In general the field of distance education has a greater dropout rate than classroom training. This is due to the following factors

- Lack of motivation
- The course does not meet the user expectations
- Personal problems
- The participant believes that this methodology does not offer long enough to learn what he need
- Technical failure in the implementation of the course
- Has physical limitations that prevent access the contents, and activities, by not be accessible.
- Technical difficulties for the conduct of the course, problems in the computer functionality, difficult access to the Internet.
- Insufficient knowledge about the use of tics that is required to study through distant education

Possible solutions:

- Training should be constructive and meaningful for the students.
- Activities should be motivating, that encourage the active participation of the students.
- Lack of communication in an e-learning experience contributes to isolation. Many people doing the training, for their condition, they search this methodology as a means of socialization, which transcends the physical space, to relate to other people with similar interests
- Distance education should not intended as a mass medium in which many people can access. On the contrary, the experience should be proposed from individuales capabilities, expectations and needs for training.

#### 2.3.5 Inclusive experiences in distance education.

There are few studies on the participation of people with disabilities in distance education. Often the disability of the person goes totally unnoticed. If not conducts a survey at the beginning of the course then the tutor can not possibly know the individual problems that are going to find. People often hide their limitations.

Training experiences were held e-learning inclusive with the participation of people with various disabilities who require assistive technologies. Most of the people who made this experience, they considered the value proposition. They would again another experience similar characteristics. Those who were able to perform this task from the role of guardian and administrator, felt that this activity may be useful to be exercised as teleworking. They were very happy with the experience, socialized with other people creating new links.

### 3 CONCLUSION

In the last decade, progress has been made on issues related to inclusiveness, however, there is much to be done on this subject. Persons with disabilities who wish to develop in the workplace and educational declared the need to improve the following aspects:

- Lack of accessibility to internal and external building constructions.
- Lack of knowledge of employers hiring policies.
- Self-discrimination.
- Difficulty of working in the family environment.
- Lack of information on telework.
- Lack of training for telework activities.

To start thinking about solutions should:

- Having the support of institutions that assist the disabled person and his family from social projects to develop work skills that are involved in labor organizations, educational institutions at all levels, universities, health, and others.
- Work Training institutions, businesses, educational institutions at all levels, universities, health and other institutions to create an environment conducive to a culture of accessibility.
- Generate state policies with business entities for the promotion, diffusion, interaction and inclusion of persons with disabilities and vulnerable with the possibility of job placement for the playing field from business strategies for telework inclusive.
- Enable equipment and Internet connection for teleworkers who prove not to access from the economic to the resource, and who were trained for the task.

Research has shown that are many areas where they can perform teleworkers. Thinking and creating opportunities for development, training and accessibility for vulnerable people involves having this many issues that are real, and are present in all areas of life, these are the obstacles which can be found for people with disabilities. These circumstances which are conditioned daily from lack of access to an education and be prepared to work like everyone else. That is why we must save not only resolve situations gaps, but also work for an inclusive society.

## REFERENCES

- [1] Gardner, H. *Teoría de las inteligencias múltiples*.
- [2] Barona, J. A. y Miranda Miranda F. *Ciencia, tecnología y sociedad: Algunas reflexiones. Documento preparado para la organización de Estados americanos, Educación para el desarrollo? Educación para la sociedad del conocimiento?*. Bogotá, (Octubre 2003), pp 19.
- [3] Godin, 2008. *Los matices del término. Indicadores de innovación: las dificultades de un concepto en evolución* Mario Albornoz. Revista CTS, n° 13, vol. 5, (Noviembre de 2009), pp. 9.
- [4] Albornoz, M. *Investigador Principal del CONICET de Argentina. Coordinador de la Red Iberoamericana de Indicadores de Ciencia y Tecnología (RICYT) y del Observatorio Iberoamericano del Ciencia, Tecnología y Sociedad. Los matices del término. Indicadores de innovación: las dificultades de un concepto en evolución*. Revista CTS, n° 13, vol. 5, (Noviembre de 2009), pp. 9.
- [5] Fonseca Tortós, E. *Seminario comunicaciones y sociedad. Computadoras y educación*. 1997.
- [6] English: <http://www.w3.org/TR/WCAG20/>
- [7] English: [http://www.usabilitynet.org/tools/r\\_international.htm](http://www.usabilitynet.org/tools/r_international.htm) ISO/IEC 9126
- [8] Spanish: <http://www.monografias.com/trabajos11/constru/constru.shtml> Sanhueza Moraga, G.