

## The UNESCO Chair TECLIN puts its technology at the disposal of children education in their native languages

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The UNESCO and the Polytechnic University of Madrid (UPM) have implemented a UNESCO Chair in linguistic technologies named TECLIN. One of its application is to teach children in their native languages.

The UNESCO Chairs were created in 1962 by the United Nations Organisation for Education, Scientific and Culture, with the aim of improving scientific research and higher education by means of inter-university cooperation and knowledge transfer between countries.

Nowadays, there are more than 770 UNESCO Chairs in different areas, of which more than 60 have been created by Spanish Universities.

The TECLIN Chair, created in 2014 and directed by the professor of the UPM Jesús Cardeñosa, centres its activities in higher education in Linguistic Engineering and transfer of technology, as well as in the social applications of technology, as for example children education, illiteracy, and cultural diversity consequences.

The Group of Validation and Industrial Applications (VAI) of the Higher Technical School of Computer Engineering of the UPM and various universities of Latin America that form the initial nucleus of the UNITWIN network associated to the Chair take part in the Chair. The UNITWIN network were created in 1992 by the UNESCO with the aim of developing cooperation between universities and strengthening the exchange of knowledge and academic solidarity in the world.

### **Technological Chair oriented to education**

The TECLIN Chair is creating an academic infrastructure specialised in the most advanced technologies in Linguistic Engineering to produce contents in indigenous languages, initially Quechua, Guarani, and Mapuche, among others. The medium-term objective of the Chair is to train professionals in Linguistic Engineering throughout the participation in the aforementioned works.

The Quechua language is a family of languages native to the Central Andes, which extends all the way through Colombia, Ecuador, Peru, Bolivia, Chile, and Argentina, and which is spoken by between eight and ten million people. The Guarani is a language spoken by eight million people at the Southern Cone of America. The Mapuche language is the language spoken by Mapuche people who live in Chile and Argentina. The number of active speakers is estimated to be between 100,000 and 200,000, and the number of passive speakers, around 100,000

people more.

The academic infrastructure created by the Chair integrates pedagogical methods and the definition of universal teaching contents, and contributes to a joint vision of a specific culture and to the expansion of democratic values.

At the same time, the Chair carries out activities of transference of technology to the involved institutions and to the associated companies in order to make use of the commercial versions of the said technologies, both in the areas of multilingual content generation and semantic search engines, as well as in every type of application of information retrieval and extraction.

The acquired experience in the development of applications has led the Chair to create a teaching staff to teach the first **International Master Degree in Linguistic Engineering**, still under preparation.

## **Response to a social need**

The Chair was born as a response to a deep social need. Considering the experiences of the past 30 years, it is known that one of the reasons that had led to the creation of the digital divide among indigenous communities and the first world is to teach children in a dominant language and not in their local languages.

Children from local communities can now learn in their native language thanks to Linguistic Engineering. From this area of knowledge is possible to automate the production of contents in different linguistic formats adapted to each community. This is the context in which the Chair operates.

The Chair is articulated around three different communities:

- Children communities of indigenous people.
- Experts in educational contents and methods, especially in indigenous people.
- University students who will be taught to teach in the International Master Degree in Linguistic Engineering, a postgraduate degree of the Chair in collaboration with the rest of the participating institutions.

The Chair will create this initial team of university students and will develop the definition of the educational structures that guarantee the academic training in these technologies, with the intention of creating a long-term higher education programme.

## Objectives of the Chair

The Chair has clear objectives, both long-term and short-term.

Long-term objectives:

- Social development through children education, guaranteeing respect to cultural and idiomatic identity.
- Indirect economic development through a higher educational level of children and graduated, linguistic engineers, who should create teams capable of dealing with multilingual issues and developing advanced tools for information access.
- Cultural development. Guaranteeing access to information in their local language helps to increase the self-esteem of the local communities and contributes to their development.

Short-term:

- Creation of technical teams highly specialised in TIC-IL-Transfer of Technology (TT).
- Definition of teams and specialised roles in accordance with the TT.
- Organisation of field works (logistics). The experience of field works with indigenous communities requires a deep knowledge of these communities and the existing methods, as well as advanced methods of educational innovation.
- Definition of common contents that guarantee and allow testing the scope of the initiative.

## Strategic objectives

In addition to these temporary objectives, the Chair has the following strategic objectives:

- Conservation of the world's linguistic heritage.
- Guarantee speakers of minority languages free access to universal contents.
- Demonstrate that technology serves to solve the digital divide created by linguistic diversity.
- Training in advanced technologies in Linguistic Engineering.

## Activities of the Chair

The Chair centres its activities in the following issues:

Field works with indigenous communities: selecting pilot communities, explaining them the programme to be implemented, creating a commission of coordination between communities, guaranteeing the effective implementation at institutional level as a pilot experience, agreeing with the communities the final contents and preparing the implementation of the programme, as well as the elements of mediation and evaluation.

Definition and generation of common educational contents for children: selection of common contents to the pilot communities, codification of these contents in the common language (interlingua) by teams trained to carry out this labour by using computer tools developed by the Chair.

Transfer of technology, technological development and knowledge dissemination: transfer of technology to the teams that have taken part in the training processes in these technologies, development of new software, associated to new languages that can be incorporated, and defining the programme of the International Master Degree in Linguistic Engineering on the bases of these experiences.

## Associated Universities

In addition to the Polytechnic University of Madrid through the Group of Validation and Industrial Application of the Higher Technical School of Computer Engineers, the following universities and institutions participate in the Chair:

- Instituto do Governo Eletronico I3G (Florianópolis - Brasil)
- Particular Technic University of Loja (Loja-Ecuador)
- FASTA University of Mar del Plata (Argentina)
- Catholic University of Temuco (Chile)

The mission of the Chair is to involve institutions of America and Europe in the coming years.

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Person to contact: Jesús Cardeñosa

[carde@fi.upm.es](mailto:carde@fi.upm.es)