

Technological model for teaching native language (Tének)

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Abstract

The native languages are transmitted from generation to generation by orality, with ignorance of the grammar, or linguistic rules that give a language education order. As a consequence of this, the language is deformed by idioms used by groups of speakers from different communities; the Tének language at the Huasteca Potosina, Mexico is a case of this effect. The investigation object regarding this study is the Informatic and its use as a driving factor in the spread, education and conservation of the Tének language. In this regard, the present project proposes a technological model for the development of a web platform capable of providing a virtual learning environment, with pedagogical conditions that facilitate the teaching of this language. The design of the project is a fusion of the pedagogical online teaching model (social constructivism), the model LCMS (Learning Content Management Systems) for creation and management content in a dynamic way and the system for teaching Tének language, derived from study of linguists at the Huasteca Potosina.

E-learning, LCMS, Tének, Native Language

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Introduction

The Tének or Huasteco is a language of protomayas roots with a substantial number of speakers in the Huasteca region in the state of San Luis Potosí. According to INEGI, there are a population of 95, 568 Tének (INEGI, C.D. P., 2011) located in different municipalities, among which we can mention Aquismón, Tanlajás, Tampacán, Ciudad Valles, Huehuetlán, San Antonio and Tancanhuitz. In each community there are variants of Tének, since oral expression, writing and reading; in many cases, the last two forms of communication are unknown. The original languages are transmitted from generation to generation by orality, with ignorance of grammar, or linguistic norms that give order to their teaching, as a consequence of this, the language is deformed with idioms by the groups of speakers in the different communities.

Even when they exist works of Tének reserchers who focus their efforts on the normalization of the language use, the product of their work - which are generally editorial papers such as books, articles, dictionaries, etc. - has reached a small number of speakers. It is necessary, then, to generate strategies of greater impact in the conservation of the language; goal of projects and campaigns that have been carried out in the country by public and private organizations, as well as transnational interest, in order to avoid its extinction.

It is not news that Information and Communication Technologies (ICTs) have been introduced to almost any productive, social and cultural sector, its advantages are easily notice given the global communication power that characterizes them, among other capabilities that have astonished their Users. The learning of mathematics, the natural sciences, or a language, are no exception to the reach of the benefices of technology.

Due to the above, the research object of this study is computer science and its use as a driving force in the propagation, teaching and conservation of the Tének language. In this sense, the present project proposes a technological model for the development of a web platform capable of providing a virtual learning environment with the pedagogical conditions that allow teaching how to read and write Tének. The virtual environments of teaching as educational technology, offer didactic tasks and integrated communication between the actors of the process, with the advantage of dispensing physical space (UNESCO, 1998). A few questions have to be answered for this proposal, they would be:

- What is the pedagogical model to follow, for teaching the Tenek language?
- Which technological architecture fits the teaching model more easily?

In order to answer these two questions, it is necessary to refer to previous works that have been carried out between the Instituto Tecnológico de Ciudad Valles and the association Dhuchum Tsalap Ti Tének, A.C. The linguists who form this association and study Tenek uses, propose a method for their teaching based on the ADDIE model.

The technological model corresponds to an LMS (Learning Management System) learning platform, since they become a repository of contents, instructions, diverse materials and products, as well as interactions between educational actors. Among its many advantages we would highlight the following:

- Accessible at any time and place
- Maximum flexibility and reduced costs.

- They do not need specialized knowledge (basic level of Internet operation and computer tools).
- It allows a constant and updated learning through the interaction between tutors and students. (Rodríguez, 2016)

The following sections present the theoretical basis of the pedagogical paradigm, as well as the technological model to be developed. Also, the development methodology is shown in which the pedagogical and technological models converge into an implementation to construct the platform. Subsequently, the results of each phase of the development method are shown to finally conclude with the case analysis and the prospective of the work.

Conceptual framework

Educational Paradigm

E-learning. The learning process through e-learning is one of the models of distance education which provides the opportunity to create student-centered learning environments, which are characterized by being interactive, efficient, easily accessible and distributed. An e-learning scenario must consider eight strategic axes: institutional, pedagogical, technological, interface design, evaluation, management, support, and ethics of use. E-learning is not only about making a course and placing it on a computer with internet access, it is about a combination of resources, interactivity, support and structured learning activities (Boneu, 2007).

Social Constructivism. Although the advantages of online learning are explicit, the success of a teaching system must consider didactic aspects that give coherence to the structure of the course.

Social constructivism is a paradigm that match the online learning context, since it is based on cooperative learning and one of its characteristics is the work in small groups, which favors students do not feel alone. The goal of social constructivism is to build knowledge among the participants in the academic task. To better understand this concept, we must see collaborative learning as a process to learn in group through sharing information, in an cooperation environment, thus developing autonomy and self-regulation.

The application of social constructivism in online environments proposes that the counselor offer strategic aids in the first steps of virtual learning and diminishing their intervention as students become autonomous. Also, the information contained in the materials should be the amount that the student can retain and signify. As for the learning objects with which the student interacts, they must be designed with meaningful activities to fulfill the objective (Gallardo, S. C. H., 2007).

Technology Paradigm

The technological architecture should be adapted to the pedagogical model in order to construct learning scenarios with intuitive interfaces, data structures that support development, communication between teacher and student, considering three fundamental elements of a collaborative learning component: 1) Content. It is the particular information of a domain of knowledge, 2) Users. They are those who perform the activities of access and exploitation of resources within a collaborative learning environment. A user can perform different typical roles such as apprentice, author, facilitator, system administrator, etc. in addition to access services offered by each role that is playing. 3) Spaces of collaboration. Represented by collaborative tools that allow the interaction of two or more users regardless of the role they play.

Web development offers several methods for creating applications, one of the most popular due its effectiveness and easy implementation, is the Engineering Iweb, which consists of the following activities:

- Formulation of the project (identification of the goals and objectives of the web application, justification of the application, and users. The total cost of the project is estimated, the risks associated with the development effort are evaluated, and a work plan is defined)
- Analysis (establishing technical requirements and graphic design requirements, performing content analysis, interaction, functional analysis, and configuration analysis)
- Engineering (content is designed, and production is done. Architecture, navigation and interface are designed)
- Generation of pages and tests (navigation is reviewed, applets and other scripts are cleaned, and the application is tested in several browsers)
- Evaluation (the client requests changes, integrates incrementally, and is validated)

This methodology is flexible to adapt to modular developments, so it can iterate its phases by each part of the application (Aular, Y., J., & Pereira, R. T., 2007).

Teaching Model for Tének Language

The ADDIE methodology (Analysis, Design, Development, Implementation and Evaluation) is a model commonly used in the design of traditional instruction, adaptable to electronic media such as the Internet. It consists of the following phases:

- Analysis. What the audience needs to learn
- Design. Sketch units, lessons and modules.
- Development. Planning activities that allow students to build a supportive social environment.
- Implementation. Implements and implements the course.
- Evaluation. Development of tests to measure instructional standards. (Yukavetsky, 2003)

The teaching system resulting from the application of this model, consists of five modules:

- Ka exla' Nik'adh duche'. Abecedario: Module focused on the teaching of the alphabet of the Tének language.
- Ka exla 'GA. Glottal and Accents: Know the phonetics of the glottal and accents.
- Ka exla 'Tajadhtalab k'ij. Conjugation of verbs: Learn how the conjugation of verbs in Tének
- Ka exla 'Tsakam dhuchláb'. Short texts: Module dedicated to teach the writing of short texts, like phrases and sentences in the language Tének
- Ka exla 'Pulik Dhuchlab'. Long Texts: Module focused on the generation of long texts for example: stories, biographies, etc.

Methodology

Formulation of the project

The objective of this web platform is to create a virtual learning space for Tének speakers, with the help of learning objects designed under a pedagogical model and implemented through technological tools that facilitate their operation. It should be mentioned that this work is part of the program of activities of the Ka exla framework project 'Study, teaching and analysis of the writing and reading of the Tének language through a monolingual educational platform on the Internet', which is financed by the Program of Equidad e Inclusion belong to the Dirección de Superación Académica; its culmination is planned for December 2016.

The design of the project is a fusion of the pedagogical model for online teaching (social constructivism), the LCMS (Learning Content Management Systems) model for the creation and management of content in a dynamic way and the system for the Teaching of the Tének language, derived from the study of linguists from the Huasteca Potosina.

Analysis

The technical requirements are associated to the web technology used, which consists of the use of frameworks for graphical interfaces, and the implementation of the MVC (model-view-controller) model, the integrated development environment (IDE), programming languages, Web servers, database managers. The content is structured in a modular way, identifying the types of users involved in the process, as well as the relationship between them based on the operations they perform.

Engineering

Technological literacy is an element considered in the development of the project, so that users do not require specialized skills in the use of applications on the Internet, this means, they empathize with the platform so that the cognitive process focuses on content not in Its operation.

The production of the elements that integrate the platform are manufactured in a modular way, among which the main interface that hosts the operation menus of each type of user, the structure of the course with the elements that integrate it (themes and activities)

Page Generation and Testing

The construction of pages is done following the coding pattern of the Model-View-Controller methodology. The classes and drivers that define this method are created using PHP technology, while views with HTML, CSS, JavaScript technology. Two frameworks are used for rapid development: Slim 2.6.1, to build the MVC model, and GUI (graphic user interface), Bootstrap v3.1.1.

One of the advantages of using these frameworks is their responsive feature, in other words, the programmer does not have to worry about adding code so that the application adapts to other devices or browsers such as cell phones, tablets or Lap-Tops.

Evaluation

The development of the application was made incrementally, hence its modular structure that allows the construction of piece by piece to complete the platform. Each module has been validated with respect to input requirements to identify scripting errors or malfunction by design. (Rogers, 2005).

Results

The result of this project is a Content Management System for teaching the Tének language, being a web platform is accessible from any point with connection to the network and easily adaptable to any operating system. It is a responsive application, so it can be viewed on a wide variety of devices, such as cell phones, tablets and laptops.

The implementation of the teaching model is observed in the hierarchical structure and the interrelation of each of the user types that operate this system (figure 1), five are identified:

- Administrator, responsible for activating institutions, integrating new learning objects to the platform and configuring teaching modules.
- Institutions, their main function is to manage teachers and working groups.
- Teachers, who configure courses and enroll students
- Students, the main player in the teaching process of the Tének language, travels through the courses designed, conducting activities, evaluating the acquired competence.

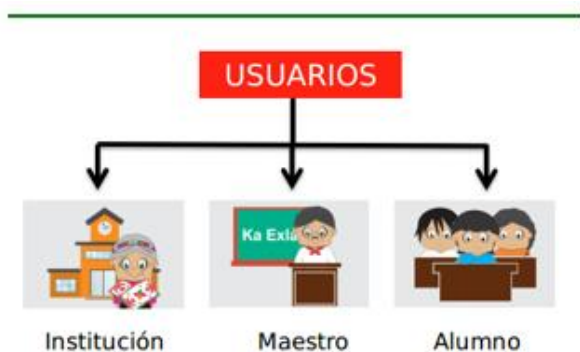


Figure 1 User types, original source

The proposed method for the teaching of the Tének language suggests attention in key learning elements, called "Learning Modules" within Kaexla. This didactic element is the basis for the construction of knowledge and four are defined for the learning process. Training administered by the platform, as can be seen in figure 2.



Figure 2 Learning modules, original source

Each teaching module defines a phase of learning by levels of domain, that is, as each module is studied, greater competences are acquired in the use of Tének. They are accompanied by learning objects designed in a playful way to interact with the user, configurable from the administrator section (figure 3).



Figure 3 Learning objects, original source

The above elements are housed in a structure that gives order to the teaching process, "the course". This structure manages modules, units for their development and resources such as topics, which are associated with documents, as shown in figure 4 and 5.



Figure 4 Main page of the course, original source



Figure 5 Structure of the course, original source

Conclusions

The platform for the teaching of the Tének language, is called "Kaexla", a word that means to know. Its database consists of a large vocabulary of words in Tének, it has 30 activities or tasks scheduled. Functionally meets the established requirements, will be online through the address www.kaexla.com, and can be identified with the main page shown in figure 6.



Figure 6 Main page, Kaexla platform, original source

Relationships are an important part of bringing the benefits of Kaexla to the Tének speaking community, the institutions which this project has have collaboration agreements are Dhuchum Tsalap Ti Tének, A.C, National Pedagogical University (UPN), Universidad Intercultural Matlapa, S.L.P.

The future work of Kaexla, is precisely to make it available to institutions for its exploitation in a way that identifies improvements and of course helps its main objective: teaching the Tének language.

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