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SCIENTIFIC ARTICLE (ENGLISH)

TOPIC:

Web Application for Teaching Sign Language, Basic and Advanced to children in the Second and Third Year of Basic Education of the Deaf Education Unit of the Provincial Government of Imbabura Module.

AUTHORS:
EVA ESTEFANIA SEVILLA ANRRANGO
MIRIAN CATALINA FRANCO CHICAIZA

HEAD TEACHER:
ING. NANCY CERVANTES

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"Web Application for Teaching Sign Language, Basic and Advanced to children in the Second and Third Year of Basic Education of the Deaf Education Unit of the Provincial Government of Imbabura Module."

Nancy CERVANTES¹, Mirian FRANCO², Estefanía SEVILLA³

TECHNICAL UNIVERSITY OF THE NORTH

¹Faculty of Applied Science Engineering, Technical University of the North, Av. 17 de Julio 5-21, Ibarra, Imbabura
²Carrer in Computer Engineering Systems, Technical University of the North, Av. 17 de Julio 5-21, Ibarra, Imbabura
³Carrer in Computer Engineering Systems, Technical University of the North, Av. 17 de Julio 5-21, Ibarra, Imbabura

nncervantes@utn.edu.ec, miry_franco@hotmail.com, evitefy@gmail.com

Summary. The reason project of this article is the creation of a web application called “Manitos Mágicas” teaching sign language to Ecuadorian children from the Second and Third Year Basic Education of the Deaf Education Unit of GPI (Provincial Government of Imbabura), which it is intended to support people with hearing disabilities, as well as those for various reasons are related to them; and also accomplish the mission of the “Tècnica del Norte” University to demonstrate their social responsibility. The project consists of two modules and provides vocabulary, phrases and evaluations that support the learning process through the media; It was designed using OOHDM methodology and several free tools for manipulating multimedia audio, video and images like Avidemux, Audacity and Gimp, Netbeans 7.2 as a development tool with JSF2.0 framework and integration with the database It has been used PostgreSQL.

Keywords.


1. Introducción

The technology nowadays is part of Education, being of vital importance enhancing in education systems for people with disabilities, in order to support the teaching-learning process, so that their integration in society and a better quality of life is achieved, as noted (Costa & Navas Castejón Martínez, 2013, p. 32) "Special education has ceased to be an education based on the idea of deficit and designed especially for the poor and disabled subject of school age, a comprehensive and inclusive education based on the notation of special educational necessity"

From this perspective, this project will set the target of developing a web application for Teaching Sign Language, that minimizes the lack of knowledge of this language visual-gestural that allows deaf people to communicate fully and develop their intellectual capacity; therefore It’s intended to become a tool to support the teaching-learning process for the second and third year of Deaf Education Unit GPI. Importantly around 2234 Deaf exist in Imbabura according to the National Equality Council on Disabilities (CONADIS) (MSP, 2014), and in this Educational Unit, children and youth with hearing disabilities who require understanding and management of sign language are formed.

In Ecuador, there is very little teaching materials to facilitate the teaching of sign language. Although the rights of people with disabilities have been considered in the National Plan for Good Living 2014-2017, "Objective 2: Promote the equality, cohesion, inclusion and social and territorial equity, diversity;" (SENPLADES, 2013); so recently public private television offers news and official programs
translated into the Ecuadorian sign language; while in other places is completely unknown, which would reassert designated by (DHEX, 2010): deaf people often suffer abuse in health services, education, leisure, among others, by limiting their communication. This It should be added that Ecuadorian foundation DHex (DHEX, 2010) lack of adequate parents and teachers of deaf children orientation, makes focus on the difficulties and not on educational achievement to be achieved.

With this background and considering that the Education Unit of the GPI has a basic and inanimate documentation, which makes tedious learning, the web application will be useful, further integrating multimedia elements that arouse interest in children with special needs to achieve interaction with the teacher and the computer application, reaching developing skills quickly; in this sense Villarroel Sunday notes: "It uses new technologies to design a didactic around a topic of little interest among students. The new media, visual and sound, increases your attention and participation "(Villarroel, nd, p. 37).

The application called "Manitos Magicas" consists of learning units, each with their content and an extensive vocabulary and expressions presented through videos for easy learning.

2. Materials and Methods

Performing this project focuses on the design and development of educational software using multimedia elements such as video, image, sound and text, with reference to the strict principles of WCAG 2.0 standard.

2.1 Materials

The tools used are open source as shown in the following table.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gimp y Gimp- GAD</td>
<td>Editing and creating images. Free tool with GNU license.</td>
</tr>
<tr>
<td>Avidemux</td>
<td>Free video editing, supports multiple file types: AVI, DVD compatible MPEG, MP4 and ASF regardless of stage.</td>
</tr>
<tr>
<td>Audacity</td>
<td>Sound editing. Free cross-stage application, GPL license.</td>
</tr>
<tr>
<td>EdiLIM</td>
<td>Games Creating</td>
</tr>
<tr>
<td>Inkscape</td>
<td>Maps Creating</td>
</tr>
<tr>
<td>Netbeans 7.2.</td>
<td>Stage for developing web applications with support for jsp, jsf and integration with PostgreSQL</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>Manager database object-relational, distributed under BSD license. It uses a client / server model and multiprocess to ensure system stability.</td>
</tr>
</tbody>
</table>

Table: Tools for creating application
Fuente: Autor

2.2 Methodology

The standard used for the design of the project was WCAG 2.0, Revilla Muñoz defines:

"WCAG 2.0 has the same spirit of trying to create an accessible web. Web accessibility is a right we all have to be autonomous in internet, that is, to be able to access content and functionality regardless of our functional diversity (sensory, motor, intellectual or mental) or the context of use (technological or environmental) conditions. "(Revilla Muñoz, 2013).

The methodology used was OOHDM, which guides the design of web applications with object orientation through a five-phase process. Figure 1
STAGE 1. OBTAINING REQUIREMENTS:
It is based on the use case charts, designed for scenarios to identify the requests and actions that the system must meet. Figure 2.

STAGE 2. CONCEPTUAL MODEL: In this stage the classes, relationships and cardinalities are generated

STAGE 3. DESIGN NAVIGATIONAL:
Allows generating a topology navigation that allows to execute all tasks required by the user.

STAGE 4. INTERFACE DESIGN ABSTRACT:
In this step the manner in which objects appear in the interface and which of them will activate navigation.

STAGE 5. IMPLEMENTATION:
It involves the choice of language development, design tools and where they are going to store the data.

3. Results

The “Manitos Magicas” web application is a support tool, consists of two modules: basic and advanced module. The basic module has seven units: ABC, Food, Clothing (Clothing), Useful, Intelligence, Society, and Environment. Here are some pictures of your interface.

The advanced module has five units: Geography (countries, provinces of Ecuador, maps), math (addition, subtraction, multiplication,) vocabulary, Language and Communication (verbs, nouns, antonyms, synonyms, etc.) and natural sciences, further make sentences using those words, everyday phrases to start a conversation a seeker and games.Here are some pictures of its interface.
learning for deaf and persons connected with them.
- The use of free editing software multimedia objects, reduce any costs that would involve creating a web application features of this project with excellent quality.
- The creation of a multimedia project following a specific methodology as used in this project OOHDM provides better analysis and design of the final product, to clearly define the conceptual, navigation and interface.

Acknowledgements

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Bibliographies References


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### About the Authors

**Nancy CERVANTES** was born in Ibarra city - Imbabura on July 5th, 1973.

He completed her Primary Education at the “María Angélica Hidrobo” School and Secondary at “Ibarra” High School in the Mathematical Physic Specialty.

Her Higher Education in the “Técnica del Norte” University (UTN), earning the degree of Engineering in Computer Systems. Graduate Research (UTN) and University Teaching at the Pontificia Universidad “Católica” del Ecuador Ibarra headquarters (PUCESI).

Currently studies a master’s degree of Technologies specialty for Management and Teaching Practice (PUCESI).


**Mirian FRANCO** was born in Ibarra - Imbabura on March 1st, 1988. She completed her Primary Education at “Quiteno Libre” School. She finished her Secondary Studies at the “Victor Manuel Guzmán” College in the Specialty of Computer Science.

Her Higher studies were performed at the “Técnica del Norte” University in the Engineering Faculty of Applied Science Career in Computer Systems Engineering.

**Estefanía SEVILLA** was born in San Miguel de Urcuquí - Imbabura on October 18th, 1989. She completed her Primary Education at “Abdón Calderón” School. She finished her Secondary Education at the “Técnico Urcuquí” High School Specializing in Computer Sciences.
Science. Her Higher studies were performed at the "Tècnica del Norte" University in the Engineering Faculty of Applied Science Career in Computer Systems Engineering