

Development of educational multimedia software for children with different abilities

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One of the most important social needs today is the generation of more educational opportunities for those children that have special education needs, particularly for those who present any physical disability. It is why, in the educational sector, it is impending that the educational departments find new tools that will support the teaching-learning process, as it will offer support and preparation to confront everyday challenges in today's society.

Since it is already known that a multimedia application will improve the traditional interphase solely based on text, it will also give important benefits to sustain attention and interest and allow the retention of the information provided. The objective here is to design and develop educational multimedia software that will help acquire capacities and the abilities in two subcategories in mathematical processing: numbers and size and shape, which is established by the Preschool National Education Program, also with pertinent strategies for children with different challenges.

Keywords: multimedia, software, educational integration, special education, math thinking.

Uno de los requerimientos sociales más importantes en la actualidad es, sin duda, la generación de más oportunidades educativas para niñas y niños con necesidades educativas especiales (NEE), particularmente para aquellos que presentan alguna discapacidad. Es así como día a día se hace inminente la necesidad por parte de las instancias del sector educativo, dedicadas a la atención de estos niños, de buscar nuevas herramientas que apoyen el proceso de enseñanza-aprendizaje con la finalidad de brindarles un apoyo y una preparación para enfrentar los retos que la vida moderna les presenta.

Partiendo del supuesto de que una aplicación multimedia mejora las interfaces tradicionales basadas sólo en texto y proporciona beneficios importantes que atraen y mantienen la atención y el interés del usuario, mejorando también la retención de la información presentada, este trabajo tiene como objetivo diseñar y desarrollar software multimedia educativo para favorecer la adquisición de competencias y habilidades del campo formativo del pensamiento matemático en sus dos subcampos: número y tamaño y forma, que establece el Programa Nacional de Educación Preescolar con las adecuaciones pertinentes para niños con capacidades diferentes.

Palabras clave: multimedia, software, integración educativa, educación especial, pensamiento matemático.

Introduction

Finding new tools that support the teaching-learning process has been the focus in the educational sector which will support children with special educational needs. At this time, in Mexico, there are no educational multimedia programs available for these children. Not only must

they migrate from an exercise on paper to an exercise on the computer, but also make the necessary adjustments to the regular educational programs in order to meet the objectives. One of the most important social requirements today is the generation of providing more educational opportunities to children with special needs. The National Program in Strengthening Special Education and the Educational Integration Program has a strategic objective: "Guarantee the quality and priority of programs to these children with special needs by means of strengthening the educational integration process and special education services available to them". Such program is an answer from Mexican federal government to all those citizenship requests about special education needs and also it traces the route that we might follow to contribute for the creation of an inclusive and integrating society where all men and women have the same opportunities to have a decent life.

Educational Integration, in Mexico, is defined as the participation of persons with special educational needs in every task of the education community. A child with special needs is who, for psychological, psychological or social reasons, needs any kind of support to be able to interact with his own environment and in case of denying or not providing him this kind of help, he will live in disadvantage under his potential level of development

It is why a group of people from the Autonomous University of Baja California has decided to contribute with educational integration in coordination with the Resource and Information Center for Educational Integration. This center mentioned has the responsibility to provide resources and information to all the centers involved with special education, such as Multiple Attention Center, Regular Educational Support Services, Psychopedagogic Centers for Preschool Education.

It is imperative to be able to have access to educational software that will serve as a support tool in the teaching-learning process. This software not only needs to be designed and developed using the physical support tools (books, stories, manuals, etc.) by working toward a computerized format, but also following the objectives outlined by the National Preschool Education Program, which would include the integration of children with special needs with those in regular education classrooms. This will also take into account the social impact that using the Information Technologies will have in the educational sector.

The main advantages that a multimedia educational software takes over a traditional teaching-learning tool is that offers a more attractive way of learning which increases the content and message assimilation, besides it opens the number of channels for getting the information, such as sound and sight, specially for those who have any kind of disability like hearing impaired or lack of vision.

Objective

Design and develop educational multimedia software to assist in the acquiring of abilities in mathematical thinking in the two subcategories: numbers and size and shapes, to children with special needs similar to those children in a regular preschool setting.

Technological Impact

As of yet there are no known software tools to support special education as the one proposed in this project. In addition, the final product is an innovative technological tool that will converge

Technological Information and the pedagogic techniques used for the teaching of mathematical thinking.

The use of multimedia for the development of applications of diverse nature is gaining more popularity in the world of computer science and in the educational realm, it favors the use of these innovative technologies and the way information is handled.

Social Impact

The software, through its reinforcing system of vision and sound, will motivate the child to continue using the software and also allow him/her the freedom to decide how and what more to do with it. The use of these kind of tools will provide the children the abilities and capacities to be part of an inclusive society and will increase their opportunities to be integrated in regular classrooms.

Educational Impact

There is a constant search for new elements that contribute to the improvement in the teaching-learning process, which now, education looks to information technology and communication. The rapid advancement in technology has made it necessary for the use of computers in the classroom. It is a support tool with activities for the students as is for the teacher. It has been proven that the appropriate use of information technology tools, has improved education and has positively improved the quality of life and facilitated for better opportunities for all individuals and society as a whole.

A multimedia software, where media (text, image, animation, sound and video) converge offers more possibilities to act as a teaching-learning tool that provides the comprehension and acquisition of knowledge, because each child with special educational needs develops his/her own skills to adjust and confront to any challenge in today's society.

The beginning of multimedia applications for computers extends the horizon for educational materials.

Methodology

The development of this project will be based upon the prototype model, which guarantees a more fluid communication between the developing team and the stakeholders.

The methodology to be used will be the one that the Mexican Computer Center (CCPM Centro de Computación de México) recommends in its publication titled: Multimedia Aplicada.

The five phases for this project are:



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