INTEGRATING SCRATCH IN PRIMARY EDUCATION

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INTRODUCTION

This paper analyzes the processes in which elementary students uses the program Scratch. This program presents a user-friendly visual language that encourages active methods, with a project-based learning and a role focused on the student activity. Scratch is free, and it is based on the ideas of constructivist learning (Logo). *The Scratch application is used to create projects containing media and scripts. Images and sounds can be imported or created in Scratch using a built-in paint tool and sound recorder* (Maloney, Resnick, Rusk, Silverman & Eastmong, 2010).

> Scratch is a tool that enables active and constructive learning; in fact, it is difficult to imagine a situation of reproductive or rote learning using this program. From the beginning, without realizing it, we start using Scratch with a group of students and we are already immersed in a learning situation that has nothing to do with traditional learning. (Lopez-Escribano and Sanchez-Montoya, 2012)

Teachers and students have the perception that programming is very complicated due to the high level of abstraction of the concepts to be learned when we program. Through Scratch is intended that students are able to work programming concepts via an intuitive visual language. This is not programming commands and lines. Logic programming focuses on performing projects using the intuitive environment that provides Scratch.

The operation is performed by placing command blocks of different colors and resulting in a product that can be displayed on the stage. Scratch has a programming language as indicated by the authors has a "low floor" and "high ceiling" (Papert assures that programming languages should be like this) so you can design and develop very basic primary activities and advance complex activities.

The creators of Scratch, Resnick et al. (2009) believe it is important that Scratch is able to encompass different types of projects in different contexts through a fun programming language, which is meaningful and social.

> It has become commonplace to refer to young people as “digital natives” due to their fluency with digital technologies. Indeed, many young people are very comfortable sending text messages, playing online games, and browsing the Web. But does that really make them fluent with new technologies? Though they interact with digital media all the time, few are able to create their own games, animations, or simulations. It’s as if they can “read” but not “write.” (Resnick et al. 2009)

OBJECTIVE

The pilot study presents as main objectives:

- Analyze the possibilities and difficulties of using the Scratch program at 4º and 5º level in Spanish primary education.

- Assess the impact of the development of international collaborative projects in teaching and learning processes.

- Check the integration of elements of logic programming in Elementary Education.

METHODOLOGY

We analyze the work of 37 students of a public elementary school. Through a systematic and structured observation we assess the work carried out with Scratch. Quantitative information is analyzed regarding competences using Scratch. We proceed to a methodological triangulation and data triangulation to strengthen the analysis of study results.

Working with other students and school around the world is very rewarding, so we analyze deeply the particular participation in collaborative projects. http://wmuseum.hiroba.sist.chukyo-u.ac.jp/Friends3a.html

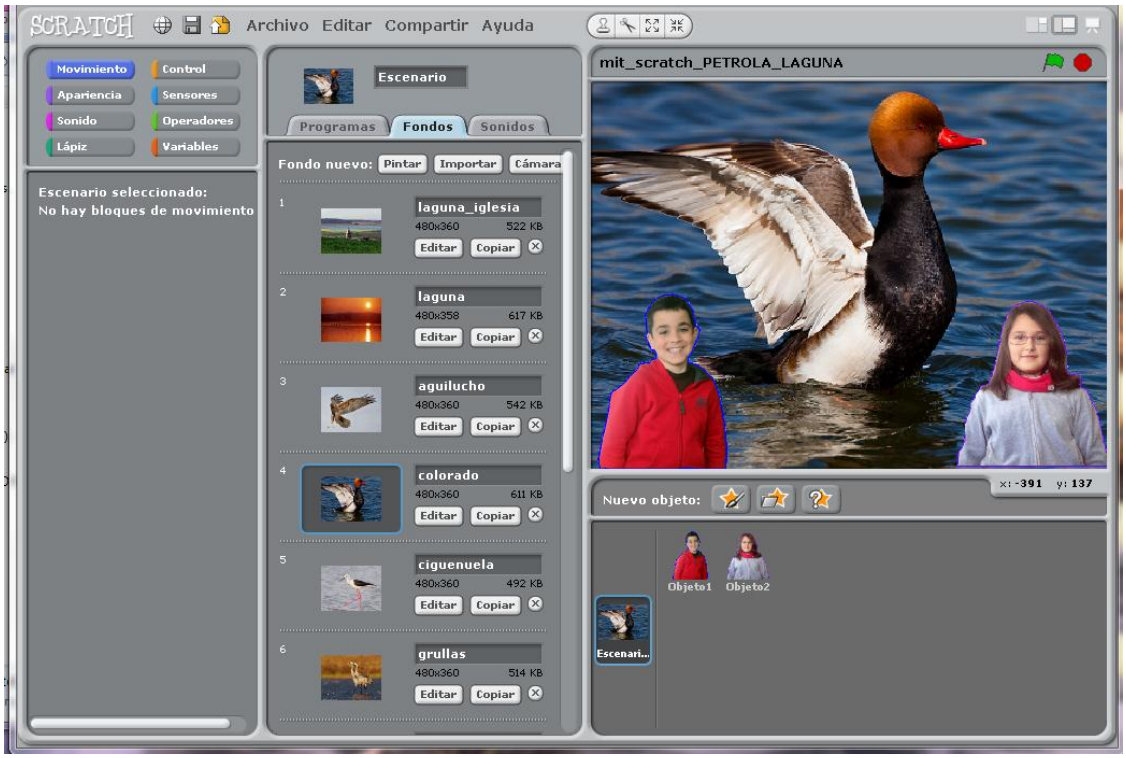

Image 1: Project Pétrola lagoon. In World friends on tour. http://ticjm.blogspot.com.es/2012/11/cortolaguna-de-petrola-petrola-lagoon.html

CONCLUSIONS

The advantages in using Scratch are evident regarding students' motivation, encouragement and the opportunity to work on projects. We also appreciate the promotion of a student-based learning and the empowerment of a greater autonomy by the students in many activities. Therefore this study supports the arguments of Lopez-Escribano and Sanchez-Montoya (2012) mentioned in the theoretical framework.

Moreover, in the study we detailed difficulties in carrying out programming activities at these levels. Students need to have a range of skills and competencies before they start programming. These basic skills needed by the pupils are not still entrenched.

Students are still working on creating folders and files management in order to save projects, upload images or sounds, use of the drawing tool and web browsing safely.

In short, in the Spanish context we do not have a subject related to ICT in primary school, so maybe this is the reason why in this type of projects teachers have to make many efforts with activities related to digital literacy with children

so it is not possible in a first approach to teach content about programming logic. Maybe this could be achieved later and with great dedication and effort.

Despite these difficulties, we experienced very basic activities with collaborative projects with students from other countries, which foster exchange and unique richness.

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