ABSTRACT
The work described in this paper addresses the development of a game focused on a project developed as a teaching strategy in the context of action-research study aimed at testing the impact of the participation in a collaborative project. The project aimed to motivate student’s to use and learn foreign languages and also to develop their intercultural communicative competence. The team consisted of 14 teachers from 11 different countries and 167 students in an international educational context. Regarding the Portuguese participation we have introduced the Area of Study namely Discovery in a class from the 7th grade students (23 students). All the work was based in two premises: use Scratch online, web 2.0 and ETwinning platform. Students from various countries together create their own games using programming Scratch. During the project, partners collaborated using web 2.0 tools, at the end, they have share their games and get feedback. This work identified the benefits and challenges of global education and intercultural interaction amongst students. Fourteen schools from 11 European countries have participated in this eTwinning project. Six schools had won the European quality eTwinning label. The methodology applied in this learning environment motivated the students and improved their learning process. It also contributed to a higher level of concentration and promoted collaborative learning. Additionally, it facilitates creativity, dialogue and the overall relationship among students. The results demonstrate that teachers perceive eTwinning as contributing towards the enhancement and development of global education through intercultural interaction. The pedagogic model based on the collaborative construction of knowledge was easily understood by the teachers.

Keywords: learning, collaborative learning, Scratch, education, games developed, etwinning.
RESUMO
O trabalho descrito neste documento aborda o desenvolvimento de um jogo centrado num projecto desenvolvido como estratégia de ensino no contexto de um estudo de investigação-ação destinado a testar o impacto da participação num projecto de colaboração. O projecto visava motivar os estudantes a utilizar e aprender línguas estrangeiras e também a desenvolver a sua competência comunicativa intercultural. A equipa era constituída por 14 professores de 11 países diferentes e 167 estudantes num contexto educativo internacional. Relativamente à participação portuguesa, introduzimos a Área de Estudo, nomeadamente Descoberta, numa turma de alunos do 7º ano (23 alunos). Todo o trabalho foi baseado em duas premissas: utilizar Scratch online, web 2.0 e plataforma ETwinning. Estudantes de vários países criam em conjunto os seus próprios jogos utilizando a programação Scratch. Durante o projecto, os parceiros colaboraram utilizando ferramentas web 2.0, no final, partilharam os seus jogos e obtiveram feedback. Este trabalho identificou os benefícios e desafios da educação global e da interacção intercultural entre os estudantes. Catorze escolas de 11 países europeus participaram neste projecto eTwinning. Seis escolas tinham ganho o rótulo europeu de qualidade eTwinning. A metodologia aplicada neste ambiente de aprendizagem motivou os estudantes e melhorou o seu processo de aprendizagem. Contribuiu também para um maior nível de concentração e promoveu a aprendizagem colaborativa. Além disso, facilita a criatividade, o diálogo e a relação global entre os estudantes. Os resultados demonstram que os professores consideram que a eTwinning contribui para a melhoria e desenvolvimento da educação global através da interacção intercultural. O modelo pedagógico baseado na construção colaborativa do conhecimento foi facilmente compreendido pelos professores.


1 INTRODUCTION
Programming and computational thinking skills are becoming ever more important in our society and working life. Learning to code develops various skills such as problem-solving, logical reasoning and creativity, and can help student motivation in mathematics theory as it encourages them to apply their knowledge. Schools are key players in introducing programming to students in an engaging way, and help defuse negative stereotypes around computer science.

Students today are facing a global society which is interconnected. This necessitates competencies in digital and cultural integration skills to become successful global

This work will be focusing on the benefits and challenges of global education and intercultural interaction amongst students participating in eTwinning projects between various European countries.

In this project have fourteen teacher who share ideas about educational systems, methologies and pedagogies used,
Globalization is a phenomenon taking place all across the globe as people of different nations communicate and interact more efficiently through technology. International issues and diverse cultures are increasingly being introduced in the classroom through global education which encompasses related terms such as “world education”, “intercultural awareness”, “global awareness “and “cross-cultural interaction” using “world” or “international” to replace global. Recommendations will also be suggested.

While the graphic “Fig. 1” represents each element distinctly for descriptive purposes, P21 views all the components as fully interconnected in the process of 21st century teaching and learning.

The elements described below are the critical systems necessary to ensure 21st century readiness for every student. 21st century standards, assessments, curriculum, instruction, professional development and learning environments must be aligned to produce 21st century outcomes for today’s students.

This work aims to present the didactic-pedagogic potential of project ETwinning “Scratch Create Games”, learn to think creatively, plan systematically, analyse

2 ETWINNING

The traditional concept of literacy is changing. In the 21st century people need much more than read, write and use arithmetic, to be able to compete in a global world.

Launched in 2005 as the main action of the European Commission’s eLearning Programme, eTwinning has been firmly integrated in Erasmus+, the European programme for Education, Training, Youth and Sport, since 2014. It’s Central Support Service is operated by European Schoolnet, an international partnership of 30 European Ministries of Education developing learning for schools, teachers and pupils across Europe. eTwinning is further supported at national level by 37 National Support
Services, it offers a platform for staff (teachers, head teachers, librarians, etc.), working in a school in one of the European countries involved, to communicate, collaborate, develop projects, share and, in short, feel and be part of the most exciting learning community in Europe, and promotes school collaboration in Europe through the use of Information and Communication Technologies (ICT) by providing support, tools and services for schools. ETwinning also offers opportunities for free and continuing online Professional Development for educators.

3 SCRATCH AND THE DEVELOPMENT OF 21ST CENTURY LEARNING SKILLS

Scratch is part of a new generation of technologies designed to help prepare students for a Creative Society. To succeed in today’s Creative Society, and in support of the mentioned 21st century learning skills, students must learn to think creatively, plan systematically, analyze critically, work collaboratively, communicate clearly, design iteratively, and learn continuously.

The report “Learning for the 21st Century” identifies nine types of learning skills which are divided into three key areas. The hand-out provided highlights the ways in which Scratch supports the development of the said 21st century learning skills.

Scratch builds on the constructionist ideas of Lego (Kafai and Resnick 1996; Papert 1080) and Etoys (Kay 2010; Steinmetz 2002). The Scratch website provides a social context for Scratch users and allows them to share their Scratch projects and learn from the projects of others (Resnick et al. 2009).

The first context is Information and Communication Skills; by working on Scratch projects, students learn to select, create, and manage multiple forms of media, including texts, images, animation, and audio recordings via the integration of a variety of media in order to express themselves creatively and persuasively.

The second context is Thinking and Problem-solving Skills; with Scratch, and in order for students to build projects, they need to coordinate the timing and interactions between multiple “sprites” (software’s name for objects) and this provides them with direct experience with sensing, feedback and other fundamental system concepts. Scratch supports problem finding and solving in a meaningful design context, as well as encouraging creative thinking – an increasingly important skill in today's rapidly changing world.

The third context is Interpersonal and Self-Directional Skills; the visual objects and modular code of Scratch supports collaboration and enables students to work together on
projects and exchange objects and code. As the Scratch programmed is shareable, it provokes the discussion of important issues with other members.

Scratch is a particularly promising environment for developing scientific models. Scratch uses an innovative interface which allows students (and teachers) to create or modify computer models with very little training on how to programmed. The interface “Fig. 2” allows users to drag and connect “blocks” (script elements) together into scripts that control the actions of “sprites” on the screen. Blocks of different types are identified via their colour and shape to help novice programmers learn what combinations of scripts are possible.

![Figure 2. Scratch on line Sofware](image)

Scratch programmed are object oriented – making it easier for objects to behave independently – like objects in the real world. Objects (called “sprites”) have basic properties such as location, size and dress, as well as other variables that the user can define. Control and sensing blocks make it easy for the programmed to react to inputs like the mouse or keyboard to create interactive games.

4 PROJECT ETWINNING - “CREATING GAMES USING SCRATCH”

The Project Name is “Creating Games Using Scratch” is Initial Activity in 05.10.2015, the Project Subjects was Cross Curricular, Design and Technology, Informatics / ICT, Media Education, Technology, the Project Languages was EN – ES – TR, the Pupil’s Age was 11-15.

Project Tools was Audio conference, Chat, e-mail, Forum, MP3, Other software (Powerpoint, video, pictures and drawings), Project diary, TwinSpace, Video conference, Virtual learning environment (communities, virtual classes, ...), Web publishing

The Project Aim was that Students will collaborate to design a game using programming cards. Students will share their games and get feedback.
A Project Summary

“We aimed to do a collaborative project that brings children from various countries together to create their own games using Scratch. We wanted to promote the use of ICT in teaching. The subject of the project is part of our curriculum. During the project, partners collaborated using web 2.0 tools. Students were divided into small groups. Each group discussed their ideas and they decided their game characters, roles and what would happen when players win or lost. They prepared storyboards, including sketch of scenes and descriptions. They made a flipbook of storyboards and shared in web pages. Then students brought ideas, resources and storyboards together and created games in Scratch and shared them in scratch.mit.edu. Students presented their works on smart boards, school TV and etwinning corner in school. We organized a competition for choosing the best works. Partners voted for the best work and we chose the winner. All works were shared in EBA website, twinspace and project pages.”

B Project Partners and members

This project have two founders, Alvaro Gosp Pastor, IES LAS ESPEÑETAS, Orihuela from Spain, and Işıl Gülmez, Şirinevler İmam Hatip Ortaokulu, Bursa from Turkey.

In this project have fourteen teacher “Fig. 3”, Aleksandar Stojković, Osnovna škola "Sreten Mladenović Mika", Ниш, Niš from Serbia, Alvaro Gosp Pastor (Founder), IES LAS ESPEÑETAS, Orihuela, from Spain, Ana Lopes, Colégio Internato dos Carvalhos, Vila Nova de Gaia from Portugal, Anna Lesiak, Zespół Szkół Ogólnokształcących Nr 17 Specjalnych, Kielce from Poland, Dalibor Todorović, Osnovna škola "Sreten Mladenović Mika", Ниш / Niš, from Serbia, Diana Petrova, Средно общообразователно училище"Христо Смирненски", Hisarya, from Bulgaria, George Kefallonitis, 1o Gimnasio Kerkiras, CORFU, from Greece, Hasan Ersoy, Eşref Ergin Ortaokulu, Bursa, from Turkey, Işıl Gülmez (Founder), Şirinevler İmam Hatip Ortaokulu, Bursa from Turkey, Nataša Majstrović, ОŠ "Zmaj Jova Jovanović", Pyrna, Ruma, from Serbia, Postolache Dumitrita, Colegiul Tehnic „Mihai Viteazu” Vulcan, Vulcan, from
Romania, Sanela Jukić, Eugena Kumičića, Slatina, from Croatia, Silvia Faggioli, IISS "Aldini-Valerianè-Sirani", Bologna (BO), from Italy, Ásta Ólafsdóttir, Rétta-holtsskóli, Reykjavík, from Iceland.

5 RESEARCH DESIGN

The research design phase is intended to prescribe a range of activities that will allow the researcher to effectively materialise his/her project. Besides the obvious aim of answering the research questions, the research design phase is implemented in order to control potential sources of bias that can influence the results of the study (Fortin, M., 1999). As such, this investigation was held under purview of the interpretive paradigm/qualitative, since its ambition is "to understand educational phenomena by seeking personal meanings and interactions between people and contexts" (Coutinho, 2006, p. 3). In addition to the interpretive perspective, this research intends to move towards the improvement of teaching practices in line with the view that "research in education is essential to the development and continuous improvement of educational practice" (Borg & Gall, 1989, p. 4).

The objective of this investigation was to:
- Provide students with a contact language: Object Oriented Programming
- Enable the operation and development of projects involving programming with Scratch
- Encourage problem solving using Scratch.

This research was developed with the involvement of one class of 3rd cycle students at Internato dos Carvalhos school, Vila Nova de Gaia, in the district of Porto. At the classe, the target population consisted of a total of 22 students, 6 girls and 16 boys. All of the students were in the 7th grade for the first time, and there was one special-needs student. The average age of the students was 12 years.

In this plan of action, there is 3rd phase:

- 1st phase-Students introduce themselves to other partners. Students was divided into small game design groups. Students will use Twinspace, Edmodo and scratch.mit.edu for sharing their ideas. Groups will collaborate using Edmodo, twinspace, e-mails.
- 2nd phase - Groups discuss on the game they will create. All groups will firstly break down the game into basic parts or key ideas and place them in a logical order to make the model of the game. All small groups will make a storyboard drawing a rectangle for each scene, and creating a sketch of the scenes and a few words to describe what's going on there. They share their storyboards on Edmodo and get feedback from other partners.
decide how many characters there will be, role of the characters. They will also decide what will happen when players win and lost. They will bring their own resources, storyboards and codes together. They will start coding using Scratch program, add characters and code them. They will create coding cards which shows the codes they used for programming the game then they will share it.

-3rd phase -When they finished they will upload their project to scratch.mit.edu. The links of the works will be shared on Twinspace and there will be a competition for choosing the best works.

6 ACTION PLAN

At begin we have to do the groups, we decide, three groups of five students and two groups with four students.

The plan of action was in the 1st phase to evaluate several methodologies for the introduction of Ewinning project in the classroom (http://twinspace.etwinning.net/9236/home).

Furthermore, six lessons of 90 minutes “Table I”, for project beginners, were planned and these all entailed practical activities “Fig.3” for each individual student to perform in class.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Introduction of the Ewinning project Create the Apresentation</td>
</tr>
<tr>
<td>5, 6</td>
<td>Use twinspace, Edmodo and emails</td>
</tr>
</tbody>
</table>

In the 1st phase, which was the adaptation to Ewinning plataform, twinspace, edmodo every student concluded the activities proposed to them, their create de presentation and we were also able to see that the students were very motivate in the classroom.

In the 2nd phase six lessons of 45 minutes “Table II”, two lessons to creating storyboard, two lesson to create the cenary, ators, and the role, two lesson to create de codings in scratch on line.
TABLE II. Activities plan 2nd phase

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Upload their game to the account of the project</td>
</tr>
<tr>
<td>2, 3</td>
<td>Shared their game</td>
</tr>
<tr>
<td>4</td>
<td>Chosen (voting) the best game</td>
</tr>
</tbody>
</table>

In this 2 phase the students have lessons of 90 minutes “Table II”, decide how many characters there will be, role of the characters. They will also decide what will happen when players win and lost. They will bring their own resources, storyboards and codes together. They will start coding using Scratch program, add characters and code them. They will create coding cards which shows the codes they used for programming the game then they will share it.

At the end of this phase all five groups have finish the storyboard of the game. It was noticeable that they were really excited about the creating the ideas of the game, shared and discuss to decide the storyboard of their game. At the end of the phase they really enjoyed showing the other students the game they had created all by themselves. The end of this phase the students have the opportunities to show and shared theirs ideas of the storyboard in their parents.

For the 3rd phase four lessons of 90 minutes “Table III” were planned and these implied the students having to share their work with others on the Internet. Every student logged on to the Scratch website (scratch.mit.edu), created an account and shared their game with other students that were online.

TABLE III. Activities plan 3rd phase

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Create the storyboard</td>
</tr>
<tr>
<td>3, 4</td>
<td>Censory, atom, role</td>
</tr>
<tr>
<td>5, 6</td>
<td>Create codings</td>
</tr>
</tbody>
</table>

7 RESULT

Every school have create this presentation use a template. “Fig. 4” in the 1st phase.
All Presentations of Schools in the Project (http://publizr.com/school/our-etwinning-project)

All Coding Cards Flipbook (http://publizr.com/school/our-etwinning-project-coding-cardsson)

Scratch Game Project Links, All Project Game Links (https://scratch.mit.edu/users/creatinggames2015/projects/)

The Best Game Contest Vote Link was of Portugal (http://tricider.com/brainstorming/3KqmZ6PsF3)

Scratch Game Project Links

Our Game Links:

- **Shopping for life**
  
  Goal of the game - Teach the player to select the healthiest products for him and the environment.
  
  Level 1 – Travel home, Level 2 – The meal choice
  
  Level 3 – Shoppong cereals, Level 4 – Shopping
  
  (https://scratch.mit.edu/projects/91440262/)

- **Game House Hygiene Rules**
  
  Learning to keep the world and how your homes without pollution. Character: cat scratch
  
  Scenarios: House, Kitchen, Bedroom, Laundry, Garage, Garden
  
  Rules: the mouse try to fix it. The level ends when the scenario is completely clean
  
  (https://scratch.mit.edu/projects/90430243/)

- **Recycling**
  
  The family is very concerned about recycling things in ecopoints will try to somehow recycle: plastic, glass, paper and batteries. If they fail and lose 20 points if they hit earn 20 points.
Characteres: Father, Mother, Son and Daughter

Scenarios: House, Living room, Kitchen, Garage and Gardens

https://scratch.mit.edu/projects/90935093/

- **How to separate waste? Recycling**
  
  Does point the player who can touch the object that owns that container. If you get the wrong object the score down one point. There are five scenarios, If they touch the object with the wrong container is removed 1 point.

  Scenery 1 – Beach,
  Scenery 2 – Street,
  Scenery 3 – Gardens,
  Scenery 4 – School,
  Scenery 5 – Cofees

- **Food healthy labyrinth**
  
  Learning to eat food healthy. This game have three level.

  With this project Portugal have owner The Nacional Quality Level, and European Quality Level.

  ETwinning Quality Labels are granted to teachers with excellent eTwinning projects. They indicate that the project has reached a certain National and European standard. For this reason, there are two labels: the National Quality Label and the European Quality Label.

National Quality Label

What are the benefits?

The Quality Label is concrete recognition to teachers and schools of the high level of their eTwinning activities. For pupils, this offers a boost to their work efforts, and for the school in general, a public affirmation of their commitment to quality and openness in European collaborative work.

A project has to broadly achieve excellence in the following areas: (1) Pedagogical Innovation and Creativity, (2) Curricular Integration, (3) Collaboration between partner schools, (4) Creative use of ICT, (5) Sustainability and Transferability, and (6) Results and Benefits.
European Quality Label

The European Quality Label is a second mark of success and is awarded automatically by the Central Support Service to schools in a project where at least two partners have already received the National Quality Label. As of October 2009, the European Quality Label is awarded only once a year and featured through the eTwinning Portal.

8 CONCLUSION

The methodology used to support the pedagogical model used in this international project promoted collaborative work.

Students communicated with people in Europe and create collaborative games. They learned about other cultures, new tools and how other students learn in other countries. Groups collaborated and competed for doing the best works. Students learned from each other, they liked this type of informal learning. Commenting on other teacher “works and collaborating with foreign students motivated our students”.

This project helped teachers to developed student’s ability of collaborative works, digital and social skills and awareness of cultural difference. My students learned that they can achieve much more through projects. This work encourage other students in school. They wanted to participate next projects.
REFERENCES


Etwinning ttps://www.etwinning.net/pt/pub/index.htm


