

# Climántica: A Web 2.0 Education Project

*An innovative, trilingual project provides a model for climate change education*



Climántica

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by **Francisco Sóñora Luna**

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**I**N THE SPANISH REGION OF GALICIA, interest in environmental education rose dramatically after two major environmental disasters: a catastrophic oil spill which polluted thousands of kilometers of the Spanish coast in 2002, and the 2006 forest fires that affected more than 40% of Galicia's forested region. The oil spill remains the largest environmental disaster in Spain's history, and the forest fires resulted in severe erosion of topsoil that impacted shellfish beds in many of the region's estuaries. These disastrous events raised public awareness of environmental issues throughout the region.

Following the disasters, an increased public demand for environmental information, along with the emerging issue of climate change, prompted the Galician government in 2006 to establish the Climántica project. The project was initiated as an interdisciplinary educational component of the "Galician Action Plan Against Climate Change". It has been developed by four working groups of experts that collaborate via an intranet platform. From the beginning, these groups recognized that to achieve the scope of climate change education they desired, a fundamentally new approach was needed—one that included the use of online technology. Although the program was initially focused only on secondary school students in Galicia, the Climántica team soon

began to explore the educational aspects of global climate change for an online audience of diverse ages, nationalities and languages.

From its inception, Climántica has been committed to establishing a web presence that allows teachers and students to exchange, assess and publicize their ideas, experiences and initiatives. It has also sought to enrich school curricula to provide environmental education resources on a range of issues related to climate change.

The project was strongly influenced by the project-based learning methodology originally proposed by John Dewey and W. H. Kilpatrick, whose writings have been instrumental in the development of critical thinking and the ability to create opinions on contemporary scientific issues. It is also based on other educational concepts such as social-constructionism, communication and argumentation processes in the classroom.

## **Website organization**

Climate change is the framework we use to introduce the eight environmental issues dealt with in Climántica – energy, waste, water resources, biodiversity, landscape and land use, rural and urban environments. This framework enables us to tackle these global issues through an interdisciplinary approach. The corresponding eight sections of the website are directly linked to the secondary school Biology

and Geology curriculum, although they are also used in Physics, Chemistry, Technology and Economy (economics). The structure of the units makes it possible for teachers to use entire stand-alone chapters, or to just extract the parts they consider most useful to their students.

Each of these sections was developed in two stages. First, the Climántica team published a secondary school teaching unit. Teachers played an active role in producing the unit's content by participating in pilot experiences. The most successful and active teachers were then invited to work together with the Climántica team to design and implement educational resources. This has led to the development of a body of material with potential for use by teachers in many different contexts, and since our website is available in Galician, Castilian and English, its reach is much greater than the Galician region alone.

In the second stage of project development, students and teachers play an active and ongoing role in growing the project. Through the Climántica website, students from 12-17 years old become climate change instructors, delivering lessons to other students on topics such as the Arctic and Antarctic effect, the development of hurricanes, the absorption of solar radiation, the greenhouse effect, the thermal regulation of the ocean, the evidence of carbon dioxide, ocean and atmosphere circulation, and so on. They also perform role play activities such as *Climate Change Dynamics*, *How Much Does Our Energetic Dependence Cost?*, *The Hidden Element Game*, and *Imaginative Workshop on Peak Oil*. At the same time, they produce papers for conferences, which may be published in the school journal and uploaded to the web.

Finally, secondary students are organized into an observation network that provides environmental data to the Galician meteorological and water services agencies. This network currently includes more than 140 secondary schools (about 30% of all such schools in Galicia).

While Galicia was not the first Spanish region to undertake an extensive environmental education project, Climántica has become a model for the entire country by using "Web 2.0" technology to address climate change. (Websites which follow the Web 2.0 protocol provide means to generate active participation and collaboration among users, such as blogs/forums, RSS feeds and social bookmarking.) As a result, Galicia has now joined Catalonia, the Basque region, Andalusia and Madrid as leaders in environmental education in Spain.

The development of the Climántica project has been



*Up close and personal: students discuss what they just saw inside the base of a wind turbine.*

chronicled in video lectures and seminars, interviews, documentaries and courses, all found on Climántica TV<sup>1</sup>. It can also be seen in a short movie called "2101 Back To Climántica" which explains the project in English<sup>2</sup>.

## Results

In its first two years of the Project, there have been more than one million hits on the website from 111 different countries. An online community of 8,000 teachers and students has developed a number of related blogs. Approximately 1,000 Galician teachers have attended Climántica training courses, and more than 3,000 students have attended Climántica workshops in their schools. Two annual student conferences have attracted almost 1,000 students, whose papers have subsequently been published online and in print.

To date, we have distributed 12,000 copies of the interdisciplinary book *Climauecambio*, which helps students develop basic skills to face the challenge of climate change. We also published 4,000 copies of our first teaching unit, which focuses on how our consumption and transportation habits have changed since our grandparents were young. We created and distributed 10,000 copies of a Climántica comic book for primary school children. Other entertaining and informative materials for primary schools such as 3D cartoon series, video games have been produced. For the general public, we have produced blogs, documentaries and magazines. Finally, we distributed 5,000 copies of a novel entitled *La Tormenta de C* ("The Storm of C"), which addresses various environmental issues related to climate change. Aimed at 10-15 year olds, some chapters are designed to be read in classroom and provoke discussion among students about how best to respond to the problems raised. Some of our

## Climántica curriculum units

### Stage 1

#### Does Climate Really Change?

Our first Global Teaching unit provides background on climate change. Each section includes classroom activities. Published in Spanish in February 2007, it has been translated into English and published online at <<http://Climántica.org/ClimánticaFront/en/page/unidad?u=01&c=01>>.

#### If We Burn We Warm

Published in March 2009, this second teaching unit uses an interdisciplinary approach to deal with the origins of climate change and the history of energy sources from the Industrial Revolution to the present. It then moves on to deal with nuclear energy, renewable energy sources and, finally, the potential of energy conservation and the use of alternative sources to power the future and reduce the risk of climate change.

### Stage 2

Our newest teaching unit is the first of a five volume collection entitled “*Let’s learn with Climántica schools*”, aimed at students 10-12 years old. It contains student worksheets, guidelines and answer keys for teachers. In order to deal with climate change and its solutions in an intuitive and holistic way, two comics were produced for the two first units of the project. They are part of the collection entitled “*Palmira and Marcial*”, whose first issue is published in Spanish, Galician and English: <<http://biblioteca.Climántica.org/resources/308/comic-en.pdf>>. They are designed to address the complexity of the challenge through fantasy and fun.

Other characters which play key roles in this task are those included in the 24 chapters of the first novel of the project, “*La tormenta de C*” (“The Storm of C”), in the collection called “*Cuentos climánticos*” (Climántica Tales), which is published in Spanish and Galician. In addition, the first volume of “*Let’s learn with Climántica Schools*” includes our first videogame of the project, CLMNTK, which is linked to the core of the book. It is an online network game that consists of making decisions about land planning and energy management in the framework of the 21st century climate change society: <<http://xogo.Climántica.org/?locale=es>>.

#### Multidisciplinary online projects for 10-17 year-olds

Digital skills are developed through the following four activities:

- Setting up the first edublog and eduforo system was implemented by experiences with 12-17 year-old students: <<http://blogs.Climántica.org/>>
- Interactive activities for 10-13 year-old-students: <<http://eduprimaria.Climántica.org/>>
- E-Learning lessons for 14-17 year-old-students: <<http://biblioteca.Climántica.org/gl/formacion/didactica>>
- Wiki for 14-17 year-old-students: <<http://www.wikimantica.com>>

educational materials are being translated into other languages like English. Already, our first comic book is available in English, along with the digital version of our first teaching unit.

Climántica has received considerable recognition. The Spanish Agency of Climate Change cited it as a model for good practice. UNESCO in Portugal is now supporting the training of teachers in that country to use the program. Project staff have been invited to speak at conferences around the world, and pilot projects have sprouted in Argentina, Cuba and Portugal.

In its first four years, the Climántica project has promoted an exchange of ideas and experiences about the problems and solutions presented by climate change. It has also led to numerous innovative teaching materials and an enrichment of our curriculum. In future years, we hope that project’s value to students will keep growing as we expand the content and geographical horizons. We will continue to use Climántica to promote teachers’ professional development and serve the general public. We hope that it will serve as a model for similar initiatives worldwide.

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#### References

- Dewey, J., *Experience and Nature*, Dover, 1958.  
Kilpatrick, W. H., *The Project Method*, Columbia University, 1921.

#### List of English language resources

- <<http://Climántica.org/ClimánticaFront/en/page/Weblog>>  
<<http://biblioteca.Climántica.org/resources/308/comic-en.pdf>>  
<<http://xogo.Climántica.org>>  
<<http://tv.Climántica.org/entradas/215>>

#### Notes

- <<http://tv.Climántica.org/?locale=es>>
- <<http://tv.Climántica.org/entradas/215>>

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