mEducation

Telefónica Learning Services

Learning about the history of Madrid using an Augmented Reality treasure hunt

Introduction to the use of the AR treasure hunt activity

Telefónica Learning Services (TLS) has developed an Augmented Reality (AR) treasure hunt to bring alive the subjects of history, the arts, architecture and town planning, together with the customs of Madrid. It is called 'Enreda Madrid'. Discovery-based learning and gaming techniques are used to deliver information of general interest via different mobile devices and technologies – thus combining the two areas of technology and culture. This is a partnership involving TLS, the National Distance Learning University (UNED) and the Centre for Higher Virtual Education (CSEV) in Spain.

Enreda Madrid has two main aims.

- To offer university students new learning strategies that combine culture and innovative new technologies, including mobile, and achieve one credit towards their course
- To offer the general public (adults aged 18 and older) the opportunity to become familiar with the latest technologies, eg mobile devices, web 2.0 technologies and social networks.

The AR treasure hunt activity simulates 17th-century Madrid, which is well-known for its links with the renowned painter Velázquez. Examples of the activities undertaken by students during the treasure hunt include:

- Running down a street alongside two members of the nobility
- Walking with 17th century neighbours in the Velázquez district of Madrid
- Visiting ordinary homes to learn how people lived and what they ate, etc
- Strolling down famous streets in the Los Austrias district, eg down the Paseo del Prado, to see the former gates of the city or the prison
- Visiting one of the most famous printing houses of that time and understanding how books were published.

During the treasure hunt, students interact with learning materials on-site and in real-time via their mobile devices, and are required to solve tests, locate different sites on a 17th-century map (geo-localisation), collect evidence and decipher puzzles. They also complete a travel log, or blog, in which they share their experiences and what they have learned.

Augmented Reality (AR) is a live, direct or indirect, view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data.

"Enreda Madrid has been very successful, because it offers people – not only students but also tourists and the citizens of Madrid – the opportunity to deepen their knowledge and understanding of our 17th-century traditions and social customs. It combines game-based learning activities, powered by technology including mobile, with social media tools and, most importantly, face-to-face participation, which promotes peer collaboration: people can learn whilst on the move and having fun!" **Yuma Inzolia** Senior Project Manager of Enreda Madrid, TLS

Structure of the course

The course lasts for 25 hours, and consists of classroom activities (1.5 weeks), the treasure hunt activity itself (1 day) and post-treasure hunt activities (1.5 weeks).

During the first block of classroom activities, students receive four hours of eLearning training in the use of Flickr and YouTube (to share photos, videos and ideas), Facebook and Twitter (social networks), geolocation activities (including the use of QR codes), and creative writing activities. They also receive three hours of training in the cultural subject matter, where they can elect to take part in studying one of three different game roles (or themes) based on Madrid in the 17th century:

- 'Marriage of the nobility'
- 'Chronicler of the town'
- 'Lavapiés neighbours'.

They are also required to complete 30 minutes of collaborative work (blogging) in the areas of ICT and culture.

During the AR treasure hunt exercise, students undertake eight hours of activities utilising their mobile devices – five hours related to cultural activities, two hours related to ICT activities (in a Learning Management System allowing the use of content, forums, etc) and a further hour on collaborative activities.

Students work in blocks of 50 people with community managers driving the activities and tweets related to each game role/theme. Once the AR day is completed, each student produces evidence of their activities and learning in the form of an online travel notebook (or blog), where they post commentaries about their activities, photos, etc. These materials are then assessed by teachers, and commented on/rated by the community of learners. The participants with the highest rated blogs are entitled to receive an Enreda Madrid award at the completion of the activities.

Use of mobile devices and connectivity

The Enreda Madrid project allows students to use their own mobile devices. These can be smartphones and tablets. To access the contents, the students are required to download the app 'Layar' and a QR app. The 'Layar' app gives them access to the Enreda Madrid project and start the geolocation process. Students can then see the landmarks with the map route to follow and, once they have arrived, they are able to access the content (comprising an audio file, a description and a question to test them). At some landmarks, the students are able to use their QR app to scan QR codes provided by the actors, facilitators, etc, to access content.

Early findings

As of February 2012, 441 students have taken part in Enreda Madrid. Most have been adult learners interested in the topic (91%), with a much smaller number of students from UNED (9%). The participation had an equal gender breakdown and more than half were between the ages 36-55.

At the end of the course, the 441 participants were asked to take part in an anonymous questionnaire. This resulted in 65 responses (a response rate of 15%). Some of the results are outlined below:

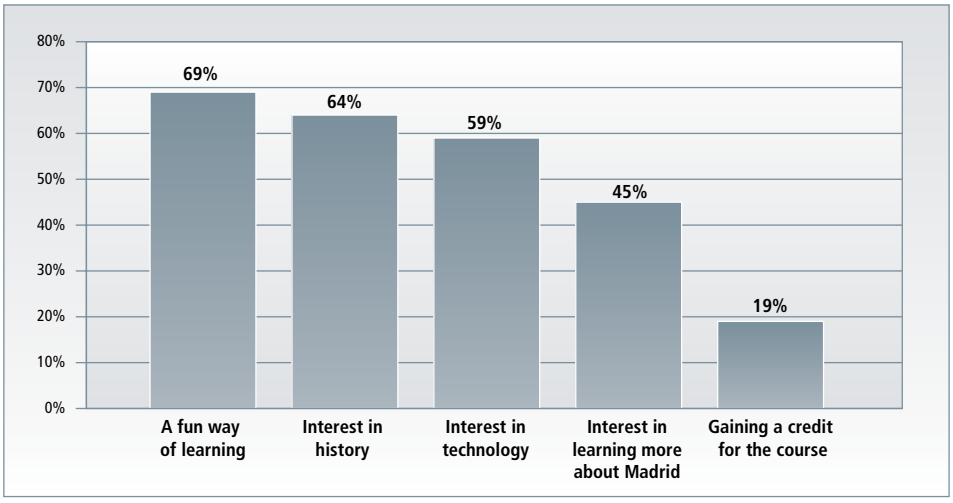
QR codes (abbreviated from Quick Response code) – are a type of two-dimensional barcode that can be read using smartphones and dedicated QR reading devices, and link directly to websites, geolocations and text.

It was found that the key reasons students took part in the project related to the new method of learning and the subjects studied, rather than the achievement of a credit that could be gained for the course (for those at the UNED):

Learners' perceptions of the usefulness of the Enreda Madrid project for learning about culture and technology

Most of the participants considered that Enreda Madrid was useful for learning, with many being very enthusiastic - 90% responded it helped them to learn history, 85% it helped them to learn about tourism and heritage, and 80% about technology.

Reasons for taking part in the Enreda Madrid project



Augmented reality – what the learners thought about it

Learners were enthusiastic about the use of AR for learning. They considered using it meant learning was delivered in a fun way, with more than half also saying that it was an easy way to assimilate knowledge and encourage pro-active learning.

Furthermore, 93% would recommend AR to others for learning history and 81% would recommend AR for learning other disciplines.

Use of social media

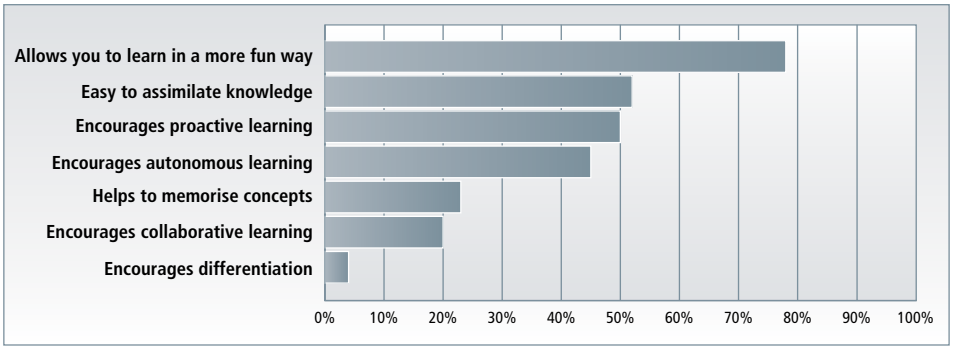
The uptake of social media was considered very important to the project. Two strategies were employed to encourage its use prior to the project's start – a 'teaser' campaign and a Twitter and Facebook quiz contest, each with different questions. Statistics relating to their use at May 2012 are:

- Facebook - UNED Facebook site - 30,276 people 'like' this page and it had 856 people talking about it
- Twitter – The project created four accounts – one overall Enreda Madrid account and one for each of the themes. In all, 738 tweets were sent.

Summing up the Enreda Madrid Experience

Finally, the students were asked to sum up their overall feeling about taking part in the Enreda Madrid project on a scale of 1-10. It was found that 68% were highly satisfied and rated it between 8-10.

Learner feedback about how the use of AR can help their learning



Conclusions

The Enreda Madrid project set out to bring alive the culture of Madrid and deliver learning experiences using new technologies. It was very successful in doing this and found that:

- Many students wanted to take part because it was a 'fun way of learning' and this enjoyment was felt even after the project had finished
- Most students considered AR helped them to learn about the subject theme and to assimilate knowledge, as well as to learn about technology
- Most students would recommend using AR to learn about history and other disciplines
- Mobile devices of varying kinds were successfully used in outdoor activities to re-create a 17th-century atmosphere using AR.

UNED is now working to introduce new technologies in a more comprehensive way into their university's teaching and learning programmes.

About Telefónica Learning Services

Telefónica Learning Services (TLS) is part of the Telefónica group of companies. Launched in 2011, it is responsible for Telefónica's eLearning services in 20 countries.

TLS brings together a multiskilled team of educators, consultants, technology experts, web developers / designers, subject matter experts, teachers, tutors and student assessors to enhance employees' skills and professional development and reduce the digital 'gap'.

Their bespoke learning solutions for companies and public administrations include learning management systems, content and services for computers, tablets and smartphones and working with social media and augmented reality. They reach more than 500,000 students every year via many different organisations.

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See the link below for a video introducing the project (in Spanish).
www.enredamadrid.es.

About GSMA

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