

GPS Enabled Learning Games

Core purpose

To use GPS devices in geo-located treasure-hunts and to develop location-based/alternate reality games.

Narrative

As part of their professional development teachers at Windywood School have been researching the benefits of both outdoor learning and games-based learning. They are keen to engage their students in a learning programme that uses both of these approaches as well as developing subject learning.

They devise a two part project involving two classes of students, the second part of which runs 3 times throughout the school year using an action research type model.

Part one: The teachers design a treasure hunt for the students around the school grounds (or could be local town/playing field). The students work together in small groups, using GPS devices to locate certain waypoints at which are located either a physical object containing a curriculum related puzzle that needs to be solved or a QR code that, with the use of a QR reader, directs students to a webpage with a curriculum related puzzle to solve. The solving of the puzzle leads the students to the next waypoint on the treasure hunt. Students record their progress, uploading specified photographs at certain waypoints to a shared file on Google Maps/Google Earth.

Part two: The teachers then ask the students to use their experiences of taking part in the treasure hunt to create their own GPS, outdoor-based, live game (based loosely on the notion of Location Based Games and Alternate Reality Games). Each of the two classes of students works together to create a game for the other class. Native language teachers work with the students to identify a text which can be used as the basis for quest type/adventure game, so that the game has a narrative and use students' experiences of digital games as a starting point for identifying what makes a good quest game. The students work to devise a game that takes place over a set period of time and involves their peers in a quest either around the school grounds or local area. As with the treasure hunt the students use GPS devices to locate waypoints and record their progress. The problems to solve are either delivered hidden in physical objects or presented and solved using digital technology (e.g. clues in the form of diary entries, websites, online games, blogs, message boards, photos etc. linked to from the waypoint using links from the map or QR codes).

The students feedback to each other on the games and use that feedback and their experiences to feed into their next cycle of game production. The games gradually get more complex and progress to involving real-time gaming in as in Alternate Reality Games with some students acting as 'puppeteers' responding to participants actions to change the game as it progresses.

Possible approaches to teaching and assessment

- Games-based pedagogies, peer-assessment, collaborative learning, self-assessment, constructivism.
- Subjects: Flexible e.g. geography, technology, languages (could create game in another language), maths (puzzles could be mathematical), history.
- Connections between 'real-life' and the curriculum.

Key concepts

- Mobile activities become part of everyday life.
- The role of play as a tool for enjoying teaching will be more important in the future.

Environment

- Treasure hunt/games carried out outdoors (GPS better outdoors) e.g. school grounds, on a field/school trip. Potential for collaboration between school and another organisation e.g. museum with outdoor space.
- Classroom – for games design
- Home – homework, collaboration via VLE/Blog etc.

People & roles

- Students: Actively involved in solving puzzles in the treasure hunt and building the activities/devising the games. Develop skills such as decision making, communication skills, critical thinking, creativity (creating something for their peers)
- Teachers: Moderators and facilitators, observations for evaluation/assessment.
- Parents/whole school community: Potential for involving parents and whole school community. Parents could participate in the games created by students.

Interactions & pedagogical activities

- Teachers working together to create the treasure hunts
- Groups – created by teachers or students or using Team Up forming teams based on skills and interests and recording teams' progress
- Students working collaboratively to solve problems, create games and devise problems/puzzles
- Discussing and sharing of what worked and what didn't in order to improve
- Using and building on students knowledge of games and gaming principles to create own games

- In part two, students who created the game (or who are acting as puppeteers) could keep track of the game participants in real-time using Google maps/google earth on the interactive whiteboard.
- Avoid any issues related to child protection (uploading photos to web sites etc.) by ensuring pics do not include children/people.

Resources & technologies

- IWB & software and associated Widgets (e.g. Google Earth)
- Mobile devices (GPS & cameras)
- Web pages – generate QR codes, Google Maps/Earth
- iTEC WP8 are working on widget that uploads data from GPS to share with other people via Google maps. Way to create and share GPS data – e.g. create and share geocaching.
- Team Up for groupings/recording progress
- Geocaching website: <http://www.geocaching.com/>
- Alternate reality gaming and learning in education: <http://www.argle.net/>
- Dragontree Home Education video, how to use GPS devices and upload tracks to Google Earth and link with a Promethean interactive whiteboard: <http://thedragontree.wordpress.com/2011/04/07/itec-were-helping-out-in-researching-the-role-of-technology-in-education-in-europe/>
- QR codes easily generated using free online software

Learning stories/activities

This scenario is designed into the following learning story:

- Create a Game - <http://itec.eun.org/web/guest/create-a-game>

*The Future Classroom Scenarios have been developed as part of the EC-funded iTEC project (FP7; 2010-2014). The Find more Future Classroom Scenarios in the Future Classroom Lab website (<http://fcl.eun.org/directory>) and learn how to create your own scenarios by using **the Future Classroom Toolkit** (<http://fcl.eun.org/toolkit>)*



