Treasure-HIT: Supporting Outdoor Collaborative Activities with Mobile Treasure Hunt Games

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Abstract: Treasure-HIT is an environment that aims to support the design and enactment of location based games conducted via mobile phones. The system allows teachers to define a set of locations (using Google Maps and Google Street APIs), to attach clues that direct the players to the locations and to conduct specific activities at each location. The system will be tested with teachers designing outdoor learning activities for the subject My Village as part of the national curriculum for elementary schools. In the poster session we shall demonstrate the functionalities and potential of the system for designing outdoor collaborative activities, present examples of games designed by teachers and discuss insights gained from the pilot study with teachers and students.

Introduction

Recent advancements in mobile technology provide new opportunities to design innovative pedagogical activities that expand beyond the boundaries of the traditional classroom (Sébastien & Audrey, 2011). These activities could be enacted across learning planes and include sequenced interactions performed across various physical spaces involving different group size of participants (Giemza, 2012; Vavoula et al., 2009). Technological support could be enabled across these activity planes providing students with a meaningful and seamless learning experience (Chan et al., 2006).

One of the approaches of combining the outdoor space in learning is by treasure hunt type games. In such games, participants are challenged to identify specific sites according to clues and to reach these sites. Educational treasure hunt games represent a cross plane pedagogical approach that introduces students with location based learning experiences (Kukulska-Hulme, 2008). This approach was traditionally enacted without any technological support (Eliot, 1926). Recent developments of mobile technologies offer new opportunities to provide direct support for such games by: tracking participants' locations in real time, presenting the game clues in various multimedia formats, enactment of pre-planned interactive activities related to the sites, collecting and sharing digital information contributed by the participants, communication between participants and with the game's instructor and controlling the activity by the game manager. This potential was recently exploited for the design of educational treasure hunt type games, supported by mobile technology (Spikol & Milrad, 2008; Hooper & Rettberg, 2011; Tol, 2008).

We present an attempt to design and develop a pedagogical treasure hunt environment enabling teachers to design cross planes activities taking advantage of the mobile devices commonly available to students.

Design a Game with Treasure-HIT

Treasure-HIT is an authoring system aimed to enable teachers to design and enact outdoor activities that are supported by GPS enabled mobile devices. These activities may resemble the classic treasure hunt game presented as a competition between teams or as a collaborative effort of teams to identify and reach a final destination.

The system includes two main components: an authoring web environment used by teachers to design activities and the player's mobile application environment used by the participants (students) during the game enactment.

The author web interface provides the ability to define a set of landmarks (stations) by using embedded Google Maps and Google Street View API features and to present clues leading the players to the station. The clues can be formulated using any type of media: text, image, video, website and sound. In addition, the teacher can attach specific tasks to be performed by the players at each station, as a condition for advancing in the game. The tasks may include quizzes of various kinds and data collection for further collaborative use. Figure 1 presents an example of the station authoring interface. In this example, students will be offered with two clues: some textual information about the station and a visual hint. When arriving at the station the players will be presented with two quiz questions and a task to be performed on site, aimed to collect and share information with other participants.

The player application supports most popular mobile operating systems and has to be installed in the personal device prior to its use. Players access a specific game by using unique code provided by the teacher.

Initial instructions will be presented and clue/s leading to the first station. The player checks if he arrived at the desired location by activating the GPS tracking (Fig. 1). If detected within the tolerance range from the defined location the game continues according to the designed scenario: tasks attached to this station are presented, and after their completion the system will provide clues to the next station.

The teacher can define the game scenario by setting the order of presentation of the stations to the groups. The order can be identical for all identical of different. For instance, if the game is played across ten stations, the route of each team may include only four different stations, while the end station is identical to all. The author environment allows teachers to share games and use them as pedagogical resources. Teachers can view games created by other authors and adopt each other's games.
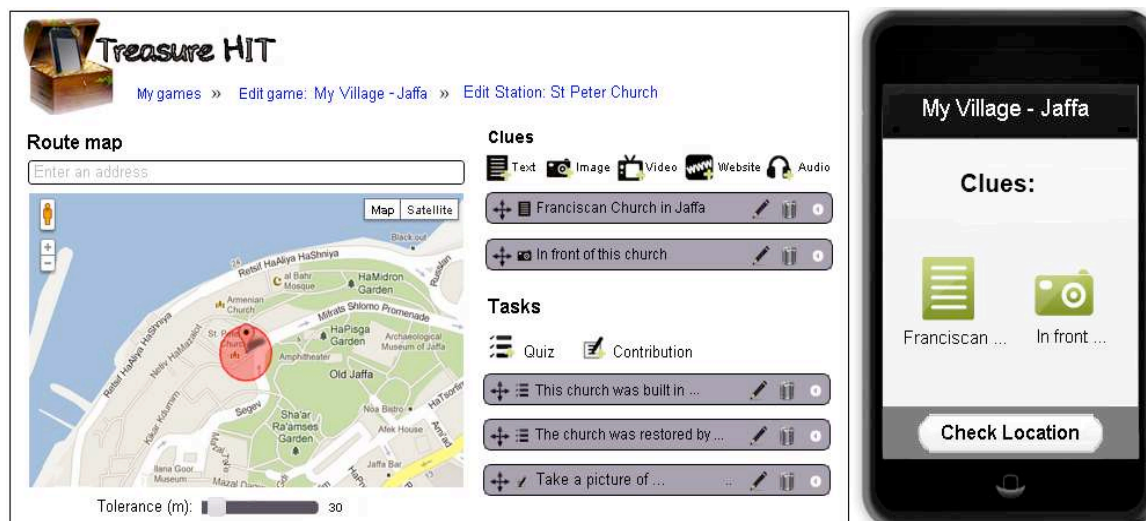

Figure 1. The station authoring interface and an example of a mobile display during the game.

The first version of Treasure-HIT will be tested with teachers and students during the current academic year. The system will support outdoor activities designed for the subject "My Village", a topic included in the national curriculum for elementary schools. Teachers will design games adapted to their villages, aiming to familiarize students with important sites of interest in their close vicinity.

In the poster session we shall demonstrate the functionalities and potential of the system for designing outdoor collaborative activities, present examples of games designed by teachers and discuss insights gained from the pilot study with teachers and students.

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