A Game Design Workshop to Support the Elaboration of Game Ideas

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Abstract. In this paper we present a set of game design workshops in the context of which we investigate design practices and elaboration of game ideas. The workshops aimed at engaging participants in crafting designs for location-based mobile games. We analyse the rationale underlying the workshops and describe their structure and the involved material. Next we outline the characteristics of six cases where these workshops were implemented and finally we present a representative set of games produced by the participants.

1 Introduction

In this paper we describe a game design workshop for creating conceptual designs for multiplayer, hybrid reality, location based mobile games supporting informal learning in cultural heritage sites. The workshop was implemented in six different cases with different participants in each case who produced 32 conceptual designs for the site of Pompeii. Multi-player location-based mobile games for learning are a multifaceted field of study. Modern mobile technology and the accompanying infrastructure that is weaved in our surroundings are becoming a new reality that needs to be studied and understood. The theoretical base of how to transform this technological potential into a form that can support playful learning can be considered nascent. In part this stems from a lack of common ground as to what elements of this hybrid space, the result of merging the digital and the physical, can contribute to learning. Of particular interest is the possibility to employ the motivational potential of games in this endeavour [3]. In the past decade there has been increased interest on how to tap on this potential of technology as a platform for location-based gaming activities with regard to learning [10,13].

Hybrid reality location-based mobile games are playful mobile activities situated in real-world contexts. They are believed to be conductive to learning, that may lead to acquisition of skills like critical thinking, curiosity, creativity, collaboration, consideration of multiple perspectives, social awareness, responsibility and media fluency [14]. These games are mobile, in the sense that they require that the players move in the physical domain as part of the gameplay and not that the players 'carry' the game on them as in 'games for mobile devices'. The underlying idea is that with these games the players interact with the real

N. Streitz and P. Markopoulos (Eds.): DAPI 2014, LNCS 8530, pp. 66–75, 2014.

world and perform physical activities situated in it. From a learning perspective, location based mobile games focus on generating knowledge in relation to their surroundings , especially in sites with cultural interest like historic city centres and/or archaeological sites. As noted in a survey of location-based games [4], these games are conceived as tools that employ the fun of a game, so that the players can be engaged with a specific location.

The design and construction of such games can be a challenge in engineering, a challenge of balancing between playing and learning, of integrating the physical context in a meaningful way, of engaging the players, of highlighting aspects related to the importance of the site etc. It thus becomes apparent that we are confronted with a complex problem which can be approached at a social, cognitive, media-theoretic, interaction or game theoretic level. This complexity is a barrier for the wider use of games in education [9,15].

The work presented here describes the structure of a game design workshop and investigates its value as a methodological instrument /tool for designing hybrid reality location based games supporting informal learning. We mentioned earlier that the workshop was implemented in six different occasions. Designers with different backgrounds (e.g. game-based learning, engineering, management of cultural heritage, education etc.) worked in groups of 3-5 persons to create a game concepts for a hypothetical location-based mobile multi-player game for the site of ancient Pompeii. The game design task that was devised for the workshops was comprised of a fixed procedure and accompanied by material and information related to the archaeological site. During the workshops, we asked each design team to use the provided materials and to generate a game concept for the site.

2 Background

Game design workshops are not an uncommon approach in regard to investigating game design [6,12]. They possess a number of characteristics that make them a suitable research tool [12]: a) they are a focused, low-cost practice that can involve a large number of participants, b) they can generate rich data for analysis and they can function as empirical tools to study the production of game designs and they do, in fact, produce new designs, and c) they can be studied rather easily (in contrast to other methods such as for example observing game designers in their workplace).

The theoretical framework on which the structure of the game design workshop was based involved a) interaction modalities with the real world, b) an understanding of game mechanics as "the various actions, behaviors and control mechanisms afforded to the player within a game context" [8], c) the learning dimension of the cultural experience [7] [5], d) the role of technology in enriching this dimension of cultural experience [16].

Table 1. An overview of the game design workshops that have been analysed. In the third column is shown the number game concepts that were generated.

	Participant characteristics in each case	Game concepts
1	2011, HCI Class in xxxxx, xxxxx Engineering students, 8th semester, programming experience, little or no game design experience	5
2	2011, PAKE training class in xxxxx, xxxxx Education specialists, partly members of design teams for ICT in education, experience in ICT in education	4
3	2011, DEG Workshop – "Involving End Users and Domain Experts in the Design of Educational Games" in Torre Cane, Italy Postgraduate students, professional designers, experts in educational technology, experts in design science	2
4	2011, GBL Summer School in Autrans, France Game based learning professionals and academics, partly experts in mobile games and mobile learning	13
5	2012, HCI Class 2 in xxxxx, xxxxx Engineering students, 8th semester, programming experience, little or no game design experience	3
6	2013, CHM Summer School in Pécs, Hungary Postgraduate students in engineering, cultural management	5

3 Research Setting

Partipants. The designers who participated in the workshops had varying backgrounds. They were recruited on six different occasions (Table 1): a) 8th semester engineering students who participated in the workshops as part of a on human-computer interaction class (cases 1 and 5), b) researchers and professional designers who participated in workshops related to game based learning and/or cultural heritage management (cases 3, 4 and 6), c) public education specialists who were training as instructors for the application of ICT in education (case 2). The participants cover a range of professional backgrounds that is expected to provide a varying perspective, while at the same time the profiles cover typical backgrounds for multidisciplinary design teams for location-based games for learning: Cases 3 and 4 are comprised of more experienced interaction and game designers, while cases 2 and 6 cover expertise leaning more towards educational and cultural heritage experts.

Workshop Layout. The design process is based on unpacking mobile games into their components, each of which is addressed separately but also in relation to the other components. This approach is grounded in a framework of design principles for location-based games defined by [2] and it partially draws elements from the Mechanics-Dynamics-Aesthetics framework (hereafter MDA) by [8]. In the workshops, the designers form teams of 3–5 members and attempt to sketch

out a game design in two phases (Figure 1). During each phase the teams use the available tools (which are described below) to generate their conceptual design. At the end of both phases, all teams present their conceptual designs. The two phases are similar, with the difference that there is more time available for the second phase. The rationale for this is to use the first phase in order to get acquainted with the process and the tools and the second phase in order to work out and describe more thoroughly the game idea. At the end of each phase, each team specifies its concept by filling out a worksheet. One of the team members takes the role of the rapporteur, who presents the team's design. During the presentations the designers are allowed to comment and appropriate the presented ideas in their own designs. After the first phase, the process is repeated and the workshop session ends after the second round of presentations. The duration of the workshop is between 1 and a half and 2 hours.

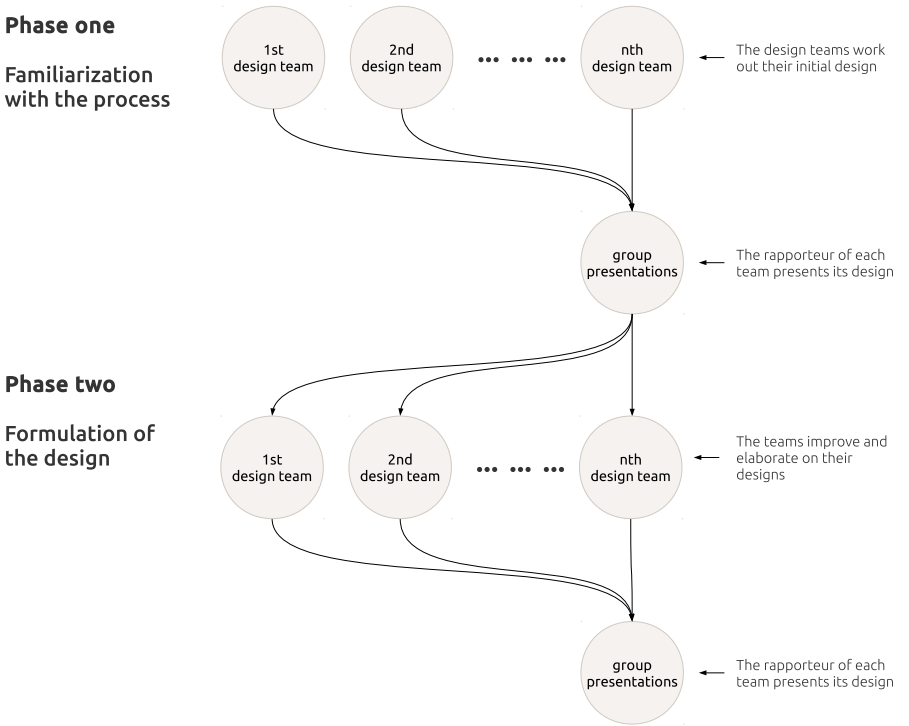

Fig. 1. The structure of a game design workshop. The workshop runs in two similar phases. First a familiarization phase and then the main design phase. The total duration of a workshop session is 1:30 to 2:00 hours.

Workshop Material. The material created for the game design workshop concerned the archaeological site of ancient Pompeii. It contains descriptions of selected landmarks, main ideas or concepts (from the economy and everyday

life in Pompeii) and a map of the archaeological site. At the beginning of the workshop session the participants receive the following material: a) **a worksheet with the main components of the conceptual design (see worksheet components) which are expected to be specified by the designers in order to create the design of a specific game**, b) a map of the archaeological site of Pompeii (Figure 2), c) a description of interesting sites in ancient Pompeii, d) concept cards that describe aspects of the live in the ancient city and e) an instruction card (the material is available at `censored`).

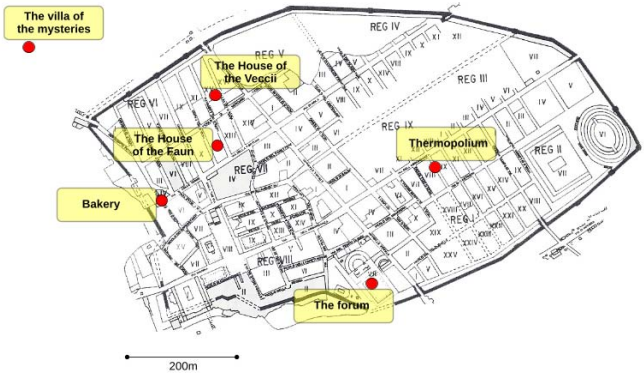

Fig. 2. This map of Pompeii, with the locations of six landmarks, is one of the workshop materials

Worksheet Components. The teams use worksheets to describe their game concepts. Each worksheet contains a number of items that are to be described or specified by the participants, on which they can contemplate and use as fill-ins to describe their game concept:

- *The title of the game*: The title can be something funny, curious, strange and/or representative of what the game is about.
- *The goal of the game*: The goal of the game involves what the players need to do in order to win.
- *The rules of the game*: The rules delineate the behaviour of the players and define the ways in which they can interact with the (real-world or digital) objects of the game with their co-players or with their opponents.
- *Use of technological means and tools*: Location-based mobile games employ technology in various ways: as information screens, as communication media, as barcode scanners, as GPS devices, as map displays etc.
- *Mechanisms*: The mechanisms of the game involve mainly the pacing of the game and the type of interaction between players.
- *Behaviours and aesthetic result*: This item involves how the game will evolve over time and what is the envisaged player experience.

Design Task and Data Collection. The workshops were realized in six different occasions (Table 1). The profiles of the participants varied in most of the

cases. While the design task was kept constant, the resulting designs reflected the profiles of the designers. In two occasions 8th semester engineering students participated in the workshop sessions, another two sessions were conducted during summer schools, one during an international workshop on game design and one were the participants were education professionals. The most productive session took place during the Game Based Learning Summer School (case 4, Table 1) where the participants had a variety of profiles (both academic and industrial) and were strongly related to a game studies background.

Each workshop session started with a brief presentation of the design task, the materials and context about Pompeii. The design scenario prescribed that the participants are impersonating game designers with the task of designing a game for visitors of the archaeological site of Pompeii. The game should thus have the characteristics of a location-based mobile game, adapted for this site. The participants were asked to design a game that can be played in a "physical space" by multiple players, who will use mobile devices or smartphones as interaction tools. They were also asked to make use of pervasive computing technology in their game, in any manner they can envisage, such as physical hyperlinks (e.g. QR or NFC tags), unrestricted wireless communication, location-sensing, augmented reality etc., without constraints. Finally the designers were asked to engage the players in learning about the specific site — i.e. ancient Pompeii. In all, the design task involved sketching out a game concept by describing its main components: the rules, the mechanics, the typical player behaviours , the available technology and the way it should be used. The requirements for this task were to create a game supporting interaction with a place of high information density, achieving any kind of learning outcome and taking into account the profiles of prospective players. The designers were allowed to assume that they have unlimited resources for their game concept. These "ideal designers" had thus to cope with a number of issues such as a) to specify how the technological means will be used in their game concept, b) how to connect the domains of the digital and the real world and c)how to employ playful interaction in the game concept.

4 Conceptual Game Designs

In this section we discuss the output of these workshops. We present in detail one example and we offer an overview of the main characteristics of the total 32 designs that were generated. Data was collected mainly by digitizing the generated worksheets. During some of the workshops it was possible to keep audio or video recordings of the discussions (cases 2, 3, 4, 5). The game concepts were subsequently analysed by employing a content analysis approach. Content analysis is not a singular method but rather a set of methods in the social sciences that are used to analyse communication and texts. Content analysis offer a number of methodological means. We employed ethnographic content analysis [11, p. 16, 21] [1], a data-driven content analysis method. Next, we will describe the specific approach with more detail.

Fig. 3. A team contemplating on their design, during the 2011 Game Based Learning Summer School in Autrans, France

Table 2. The titles of the conceptual game designs that were produced in the workshops. The contents of these concepts have been posted at **censored**

	Game title
1	**HCI Class in xxxxx, xxxxx**
1.1	Fauns agains Vetti
1.2	A day in Pompeii
1.3	Pandora's Box
1.4	I was in Pompeii too: Fire and Lava (episode I)
1.5	Find Pompeii's Secret
2	**PAKE training class in xxxxx, xxxxx**
2.1	Searching in Pompeii
2.2	Touring Pompeii
2.3	Mortuus Pompeiis
2.4	I live my place some place else
3	**DEG Workshop in Torre Cane, Italy**
3.1	The Day of the Eruption
3.2	Reveal the Story
4	**GBL Summer School in Autrans, France**
4.1	No Panic in Pompeii
4.2	Inspector Peritus
4.3	Pompeii Apocalypse
4.4	Last Party under the Volcano
4.5	Pompeii Total War
4.6	Swap and Survive
4.7	Bloody Pompeii

Table 2. *Continued*

4.8	Roads of Lava
4.9	Back to the Future: Back to Pompeii
4.10	Murder Mystery Pompeii
4.11	The Volcano Strikes Back
4.12	Dionysos' Wild Party or Vesuvio's God
4.13	The Mystery of Pompeii
5	**HCI Class 2 in xxxxx, xxxxx**
5.1	Murder in Pompeii
5.2	Hunting in Pompeii
5.3	Murder at Faun's
6	**CHM Summer School in Pécs, Hungary**
6.1	Dionysus Puzzle
6.2	Soul of Pompeii
6.3	Legendary Game
6.4	Treasure Hunting in Pompeii
6.5	The Golden Treasure of Pompeii

A total of 32 game concepts were produced by the design teams (one design in case 3 was not documented in the final worksheets).

4.1 An Example:"Pompeii Total War"

"Pompeii Total War" is one of the concepts from the workshop at the Game Based Learning Summer School in 2011. Below follows the complete document that the participants delivered after the 1.30 hour session. The designers are clearly inspired by the "Total War" series of video games and have modelled their design accordingly. The language of the original design has been preserved.

The Aim. Conquer and protect flag of/from every team (other players). Your devices assist you: You can see buildings and NPCs through it. It also features a dynamic map of your camp flags and conquered flags. NPCs will give you hints and help you to solve puzzles and enigmas through a dialogue interface. Beware, you will often need to gather several clues to solve puzzle in the same time in different places. So split the team and use the simplified com-system to stay in touch

The Rules. You must protect and conquer flags by answering puzzles: - a foreign flag can be captured when resolving the puzzle that an NPC guard gave to the team. - you can recapture your own captured flags by answering a new enigma to the NPC guardian - you can recapture a lost flag by answering again to the guard (another enigma of course). You have 2 hours for the contest.

Use of Means and Tools. Tablets/smartphones with GPS (location), camera (augmented reality) dynamic map of Pompeii with list of team flags (conquered) network connection to a ?? (*–unintelligible*) (Real time changes on the world).

Game Mechanics. - RTS, capture the flags - several located enigmas - time challenge (capture the most flags) - collaborative resolution (ubiquitous problems for teams) - building strategies with several roles in the team - communication with legendary known NPCs (gods, generals, famous).

Some enigmas: on the same flags there are several possible enigmas. They are asked in a progressive way: the easier first, the harder last. Puzzle: the mosaic with Alexander and find the place where the mosaic is. A non playing character asks the players to find a picture in the pool. But to see the pic, the pool must be full. So they have to split into 2 groups. One must stay near the pool, the other has to find the valve. Once the valve is found, they open it and tell the others to look at the pool. Attention, the valve must be shut down whether the other teams can find it. Then all players have to go back to the NPC and explain who is on the pic and his role in the mythology (Dionysos, god of wine). If they are wrong, the NPC explains them but they loose the flag.

Player Behaviour and Aesthetic Result. - competition and pressure – discovery of amazing [places — people (NPCs)] - self efficacy improvement when a cooperative problem is solved - fun! - Learning a lot about past Pompeii.

5 Final Remarks

The workshop presented here is based on an understanding of location-based mobile games as complex entities that can be synthesized in a component-based manner. The workshop functioned as tool for contemplation and it allowed the participating designers to elaborate on game concepts for location-based mobile games. The analysis of the game concepts that were produced highlighted common design practices such as drawing elements from known games or genres, or employing narrative as a gameplay element. Finally, the design documents allowed us to extract a set of design patterns which could be used as building blocks for creating new games.

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