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From information consuming to participating: gamedesign supporting learning experiences in museums

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From information consuming to participating: game-design supporting learning experiences in museums

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Abstract

In this paper we analyze two different trends that have informed technology for learning in cultural institutions during recent years: one more established trend, supporting the information consumption metaphor and the other one, emerging recently, that invites visitors to participate in the process of culture creation. We discuss then game design as an example of participatory activity and we identify its learning dimensions. In particular, we elaborate on the role of technology in providing a scaffold that can help museum audience to construct games which can function as "*public artefacts*" and can be added to the museum's assets, enhancing audience engagement and community building.

Keywords: museum learning, game based learning, participation

Introduction

This paper builds on previous work about the use of technologies for learning in cultural institutions (Yiannoutsou, et al., 2011a) where an analysis of selected cases revealed that technology mainly functioned as a medium for information delivery. This use of technology treats culture as something that can be "transferred" from the "knowledge holding" museum to the visitor. In this context museum experience is structured around the consumption metaphor: the museum produces "information" in digital or other form, for the visitor to consume. Studies evaluating the learning experience which is based on the information consumption metaphor used the term "museum fatigue" to highlight visitor limited ability to remember, digest and utilize the information offered (Bitgood, 2009). Furthermore, various studies report decrease in the audience of museums and cultural institutions (Simon, 2010). Technology has been employed in various ways by museums to support their reconnection with the public where we identify two main trends with respect to the learning experience pursued. One, more established one, focuses on refining the information and the way it is delivered to the visitor. The second, more recent one, redefines the role of the visitor and his/her relationship with the museum in the process of culture creation. In this paper we will briefly refer to technologies supporting the information delivery metaphor and we will further expand on how technologies can support a learning experience based on visitor participation in the process of culture creation.

Personalization and games: same content in new clothing?

In this section we will discuss the learning implications of two examples which we consider that involve information transfer: personalization and games. These two examples represent the current trend in technology development to support - enhance museum experience (see for example the funded EC projects in FP7 and the recent call for digital culture, Cordis, 2012) applied in order to attract more visitors to the museums. Here we will only discuss the

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rationale underlying in general the learning experience that seems to be supported by these two examples.

Personalization aims at adjusting and transforming cultural experience so as to meet the experiences, interests and knowledge at the level of the individual visitor or the group. To this end, technology has been employed to either create visitor profiles according to which a different route or narrative is offered to the visitor that fits a specific profile or to generate dynamic paths in the museum based for example on the cumulative visitors' history (Bohnert et al., 2008) and user-generated content (e.g., tags and comments) to enrich further the systems' capabilities in selecting the most appropriate content for the user in the CHAT prototype (de Gemmis et al., 2008). The rationale for applying such techniques is that cultural heritage sites have a huge amount of information to present, which must be filtered and personalized in order to enable the individual user to easily access it. Although this approach supports visits adjusted to visitor interests and previous knowledge-experience, the visitor still consumes information; more fine grained this time. Thus, personalized interaction eager to bring visitors closer to the museum reproduces the passive role of the visitor where the museum does all the work to accommodate the interests of the visitor.

Games on the other hand are not new for museums. The infusion of new technologies in cultural institutions and more specifically, of mobile technologies have resulted in new ways of experiencing these games in cultural institutions (spatial awareness) and have helped in reaching a larger audience (not only children but also adult visitors). Many mobile games however, created for supporting cultural experience with the aim to engage users fail to bring at the centre of the activity the cultural content in playful ways. So, there are game and story instances (see for example Akkerman et al., 2009; Paay et al., 2008) where players seem to be enjoying the cultural experience but the question here remains to identify how cultural content is integrated in these games and stories and what is actually the game elements that invoke visitor engagement. Our observation is that quite often visitors engage with cultural content (e.g. explore the historical centre of a city) in the context of following the plot of a mystery story or being engaged in a role play game. Yet, in many cases engagement with cultural content remains at a superficial level as it is not organically integrated in the story or the game (Yiannoutsou & Avouris, in press). As a result, engagement with the cultural content (e.g. responding to questions, taking pictures) becomes the "price the visitors have to pay" in order for the interesting things and the fun to carry on (e.g. to see what happens next in the story, or to continue playing the game). Furthermore, the output of this process is factual information (e.g. visitors end up knowing that there is a convent in the city) leaving outside other aspects of the cultural experience (e.g. creativity, finding connections with own experience, gaining ownership over the cultural experience, etc).

In conclusion, in this section we focused on the learning involved when using personalization techniques and games to support cultural experiences. We focused on these two examples because of their wide adoption in cultural institutions during the last years and because they are claimed to result in active visitor engagement with cultural content. Our analysis showed that the mainstream use of these approaches ends up often in consuming or collecting factual information by the visitor where the museum is the entity that holds the knowledge for the visitor to collect it or consume it. This is not to imply that game and personalization technologies can only support the information consumption metaphor. Instead, as we will show in the next section, personalized learning and games can offer rich learning opportunities if they are integrated in a different rationale with respect to the role of the visitor, his/her relationship with the museum and the goal/nature of learning in cultural institutions.

Participation as a context for rethinking technologies that support learning in museums

Participation-based cultural experience is based on the assumption that culture is generated dynamically through the dialectic relationship between the museum and the visitor (Simon, 2010). Proctor (2009) used the metaphor "From Parthenon to Agora" to illustrate the shift from the perception of cultural experience as something that the museum holds and the visitors see but don't touch, to something that can be discussed, shared and negotiated. Apparently, the role of the visitor in this context changes to collaborator and partner (Simon, 2010). Furthermore participatory cultural experiences imply a new relationship between the visitor and the museum which is not restricted to one off or first time visits. Instead, participation aims also at building an enduring relationship with existing audiences and communities (museum friends, volunteers, etc.) related to the museum (Black, 2005). Building an enduring relationship between the visitor and the museum through active participation of the visitor enhances the cultural experience for the visitor and enriches the content and the impact of the museum also on first time or one off visitors (ibid).

In the wide spectrum of participatory activities (for a detailed presentation see Simon, 2010) we identified two types of activities relevant to our analysis. The first type of activity reserves for the visitor a role similar to the documentation process performed by the museum. The proliferation of mobile technologies and social media has supported the creation of user generated content using various crowd-sourcing practices (Oomen & Aroyo, 2011).

The second type of activity aims at resuming or approaching cultural experience through engaging visitors in the creations of "meta-artefacts" – i.e games or stories based on compositions of elements of cultural content - which are supposed to have a public status. The idea of involving visitors in creating computer-based public artefacts that make use of cultural content is new. It builds on a theoretical background that acknowledges the gap in the communication between the museum and the visitor and calls for active participation of visitors in the dialogue with the museums (Hein, 2006; Simon, 2010).

Three examples are known and presented here: One comes from the British museum that is currently organizing a 2-hour family workshop on game design. Participants are invited to build their own games inspired by the collections and stories of British museum (after visit experience). The new games can be uploaded on the web to be played at home or shared with friends. The second example comes from Tate Gallery where young visitors (6-12 years) create games for Galleries (Jackson, 2011) and films for pieces of art. The third example is the idea of remixing museum content for the creation of a visitor generated narrative (Fisher & Twiss-Garrity, 2007). This example is grounded on the observation that visitor centric exhibition narratives should not be the objective of the cultural experience, instead the focus should be cultural activities promoting the construction of narratives by the visitors. Visitor generated narratives build on the transformative connection between the visitor and the exhibit, asserted by Hein (2006). Transformative experiences can occur when the visitor is encountered with challenges and triggers for finding connections with the exhibits and having the tools to analyze and manipulate them in order to transform them into something new, related to his/ her experience.

Although both activity types reserve an active role for the visitors they have a drawback: visitor generated "products" -content or artefacts- are almost never integrated in the museum's assets because of their low quality (Simon, 2010). This problem is related to the open ended and unstructured participatory activities:

When it comes to participatory activities, many educators feel that they should deliberately remove scaffolding to allow participants to fully control their creative experience. This creates an open-ended environment that can feel daunting to would-be participants. … What if I walked up to you on the street and asked you to make a video about your ideas of justice in the next three minutes? Does that sound like a fun and rewarding casual activity to you? (ibid, chapter 1, p.13)

What Simon described above draws upon an approach which asserts that learning in museums should focus in triggering visitor creativity and subjective interpretation of cultural content leaving aside the "knowledge of the museum" which prevails in the information consumption metaphor. Simon showed that in participatory activities this perspective has its weaknesses. In the same line comes the idea of "objectified cultural capital" (Bourdieu, 1986) which explains that cultural experience is not just an issue of access but it is also an issue of background knowledge that supports the person to appreciate and understand the value of a piece of art. Museums and cultural institutions offer in the process of culture creation not only the objects-exhibits but also the background knowledge about the exhibits. In our view the key in this process is how we integrate and combine exhibits and background knowledge in the cultural learning experience. For example, museum knowledge does not have to be presented as an axiom to the visitor but in any case it needs to come into his/her attention as material to be negotiated, discussed, shared and used for the construction of something new. We argue that technology can play a crucial role in this approach and we further illustrate this presenting the example of game design as a context for learning in cultural institutions

Game design as learning activity in cultural institutions

Game play is not a new practice for museums. The introduction of digital technologies resulted in revisiting the idea of game play and storytelling in museums. Technologies today play a key role in interaction, interpretation, learning, content creation through crowd-sourcing, outreach, marketing, etc. (for a detailed presentation and overview see Beale, 2011). Whereas there is an extensive analysis on game play, research in cultural heritage sites have not addressed yet the idea of game design as an end user activity.

Interestingly, research in the field of technology enhanced learning has already highlighted the learning potential not only of game play but also of game design and development (Kafai, 2006). Game design activities were identified as having the potential of helping learners to build a new relationship with knowledge, as learners feel ownership over the knowledge and experience deep interaction with the learning concepts to be integrated in the game with a functional role. As Kafai et al. (1998) observed, learners negotiated with learning concepts in this context, in order for the game to be playable.

Research in the field of game design by non-technical end users – such as students - has focused on the learning activity which has been analyzed from two perspectives. The first one focuses on studying learning related to programming or specific skills and concepts (see for example Hoyles et al. (2001) for a discussion on children's causal reasoning and rule understanding during game construction). The second and most recent perspective acknowledges game design as a learning goal in itself (Hayes & Games, 2008). In this trend, researchers have coined the term "Design thinking" to encapsulate the set of learning and meta-cognitive skills involved, such as system based thinking, self-regulation, social, technical, technological, artistic and linguistic skills (Salen, 2007; Robertson & Howells, 2008). The analysis of learning through game design shows that the learning experience is shaped and amplified by the feeling of ownership over the games created by the learners,

the participation in communities that share and exchange ideas and the motivation inherent in game play and game design (Rieber, 1996; Robertson & Howells, 2008; Salen, 2007).

Game creation in cultural institutions as participatory learning activity should be integrated in activities that will give the chance to visitors to interact with museum staff and discuss, negotiate, and integrate in their games different aspects of cultural content. Game creation can be supported by technological scaffolds (such as game templates) and personalization techniques that present the museum view in order for the audience constructions to meet their standards and become a public artifact that can be used by other visitors, can be shared, revisited, discussed, changed and expanded.

Game creation platforms and their relationship to learning

When it comes to technology based scaffolds for game design there is a question we need to address: Do we need to design game-creation platforms to support learning in museums or we can use existing solutions such as *KODU*, *storybricks*, *Game Star Mechanic*, *Game maker*, the *Games Factory*, and many more (for a critical review of technologies for game design see (Hayes & Games, 2008). The answer here is that the technologies used for game design are configured to support not only the creation of games but also to facilitate the other objectives related and integrated in game design (e.g. the different types of learning, or in our case the cultural experience). Thus when game design is employed for purposes other than game creation then the design tools consist of elements and support practices related to the purpose for which game design is employed. So, for example in the case were the learning objective involves spatial concepts then the tool focuses on bringing into the foreground the issues related to orientation, map alignment, use of systems of reference and how these will be integrated in the game (for a detailed description see Yiannoutsou et al., 2011b). It becomes apparent then that if we want to employ game design in the cultural experience we need to create a platform that engages users with what is considered crucial for the cultural experience. In the case of cultural experience the game design platforms could focus on the connections the visitor can make between the different cultural artefacts and with overarching concepts, beliefs and narratives (Falk & Dierking, 2000; Hein, 2006).

Concluding Remarks

In this paper we discussed the use of technology as a medium for learning in cultural institutions. Starting with technologies to support learning as *information consumption*, we moved to more recent approaches that involve *visitor participation* in the process of culture creation. Our analysis highlighted that participatory activities such as *game design* when scaffolded by technology and integrated in museum activities can offer rich learning experiences which reserve for the visitor the role of collaborator and partner and entail the creation of an enduring relationship with the museum. This rather new approach needs to be further investigated and supported through specific game-design tools and empirical studies.

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