

New technologies in the service of museum education

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ABSTRACT: The spirit of cultural democratisation imposed the need for multimedia services and technological equipment to be deployed by museums. This article endeavours to explain how the use of new technologies justifies their increasing social mission by providing additional educational tools to museums in order to enhance visitors' experience and showcase museum collections to the public. Basic audiovisual media and digital applications are featured in this article. Personal digital assistance (PDA), special audio guides and text phones, information kiosks and touch screens, as well as interactive discovery rooms are some of the presented and discussed technological products that are evidence that new technologies provide significant service to museum audiences by providing visitors with a unique experience of knowledge acquisition and entertainment.

INTRODUCTION

In the era of digitisation and new technologies, in order to be viable and profitable, cultural organisations have begun to change orientation by using digital media and multimedia applications. They hope to attract new - mostly younger - audiences; thus, giving an alternative dimension in different cultural experiences and making traditional cultural activities seemingly more attractive and interactive to the viewer or user. Following this idea, museums in the 21st Century have been showing strong interest in adopting an outreach policy and have opened their doors to reach social groups not normally belonging to the so-called *classic* museum audience. By organising and implementing activities for every visitor, like students - teachers - art lovers - disabled people - senior citizens - foreigners, museums are reaching people who otherwise would not have access and would not be interested in having access to cultural events. In this cultural shift, new technologies empower museum communication and education by integrating interactive multimedia, combining sound, video, image, text and encourage and allow active involvement of visitors in museum events. Through various digital educational programmes and with the installation of audiovisual systems, museum education is amplified and museum communication with the local community is developed.

NEW TECHNOLOGIES IN THE SERVICE OF MUSEUMS

The application of multimedia systems operates as an additional tool for information and knowledge for visitors. Auto-guides, personal digital assistants (PDAs) and handhelds, as well as information kiosks, enhance the educational role of modern museums. They support the interpretation and understanding of museum exhibits, attracting the public and facilitating the social interaction and communication between exhibits and visitors, through an experiential and participatory experience for all [1]. At the same time, they can be arranged to meet very specific individual needs, such as in the case of a visitor with limited accessibility. For example, info-kiosks can provide access to a museum object which is not exposed due to lack of space, or they can help either a visitor with mobility impairments, or other people unable to move about easily in every room of the museum. A pregnant mother with a baby stroller or a senior, can be provided with the opportunity to see many exhibits at the kiosk. By using an auto-guide, the database on an info-station, or any other multimedia device, visitors can enjoy a unique experience.

According to Screven, *...interactive devices of interpretation enhance the ability of the visitor to examine and understand the exhibits and prolong his/her staying and touring into the museum* [2].

Among the applications that museums can use to display their collections in an attractive, engaging and accessible way for all visitors and leveraging public education, are the following:

Audio-guide Devices

A manual auto-guide device is a useful tool for every visitor to a museum. No larger than a mobile phone, this specialised device provides information relevant to the museum's collections, combining image with sound, resulting in an attractive and interesting guided tour for the audience. In addition, it has the advantage that it allows the visitor to get a unique experience by choosing, which exhibits he/she is interested in observing, without being obliged to follow a typical, predefined museum tour. Such devices are:

- Audio-guide text phone. The visitor can select a number from the mobile device, which corresponds to a certain exhibit and an acoustic description of this follows.
- A video-guided tour on a palmtop computer. The interpreter is seeking to arouse the visitor's interest, to inspire her or him and to promote an effective communication and interaction between the visitor and museum exhibits.
- Audio-guided tour with subtitles. In the past, museum visitors who preferred a text-based tour, rather than an *in situ* tour, used to *wander* within museum rooms, holding and reading informative brochures, an awkward and tedious enough procedure. New technologies provided a solution to this problem by creating interactive multimedia guides, where the chosen exhibit is presented on PDA's screen, fully commented with interesting, detailed descriptions, in subtitling [3].

Interactive Applications for Mobile Phones

The application of mobile phones involves the diffusion of museum information through such devices, and it is accessible by the software of Apple or Android [4]. The holder of an i-phone or a smartphone handset acquires the possibility to download the application on its mobile device and obtains information related to museum exhibits and collections, current exhibitions and events, opening hours, ticket prices, services, programmes, etc. Another such application is Clio Muse. It is an interactive educational tour guide application for visitors at the *Museum of the City of Athens - Vouros-Eutaxias Foundation*, which can also work as a statistics tool for museums to adapt their exhibitions better to their audience. Visitors use this platform as a means for touring inside the museum either *in situ* or from a distance. The access to the platform is via smartphones and tablets (iOS, Android). In the following photos, one can see how the application works. Figure 1 shows Clio Muse that provides the visitor with some information about the exhibit of the Museum. Figure 2 shows the bust of the founder of the Museum. The Clio Muse sticker beside the exhibit indicates to the visitor that it is included in the application's data.



Figure 1: Information about the exhibits (Clio Muse application by A. Fatouros, D. Tsevreni and Y. Nikolopoulos) (Courtesy of the Clio Muse Group, May 2014).



Figure 2: The bust of Mr Eutaxias with the Clio Muse sticker and the reference number of the exhibit that corresponds to the application (Courtesy of the Clio Muse Group, May 2014).

Information Kiosks with Touch Screens

This information system, based on the operation of an embedded computer with extended memory capacity, guides museum visitors to the collections virtually, providing an effective, additional tool for the enrichment of a visitor's educational experience. Most common touch screens are based on a sheet of glass covering the display where various technologies are applied to the glass to allow the visitor to select the museum exhibits of interest on a display for further interaction. In case of a museum with limited public access to its exhibits, or limited room for the display of its collections, the benefits of such multimedia systems are considerable.

The installation of a kiosk is very useful especially for children, and it could end up being a main source of learning and inspiration in a museum. With its links to relevant information, images and videos, quizzes to be answered, museum treasures to be discovered, and the *next* button on the screen leading children to the next screen of the story, all reflect the motto *make learning real fun*. This whole experience during their visit makes them more receptive to museum knowledge and it renders the interpretation of the exhibits more intelligible for the younger and, thus, less experienced audience.

The virtual tour introduces museum collections or specific exhibits in three ways [3]:

- The simplest type of virtual tours consists of alternating images, showing museum objects and their documentation.
- Another type of virtual tours is the panoramic one, where the *natural* obstacles, probably encountered in a real tour, are surpassed and the visitor enjoys three-dimensional images, fully rotated in 360°.
- The most popular type of info-kiosk is the one displaying videos, combining images and detailed audio descriptions, along with worksheets and, thus, highly arousing the user's interest (Figure 3).

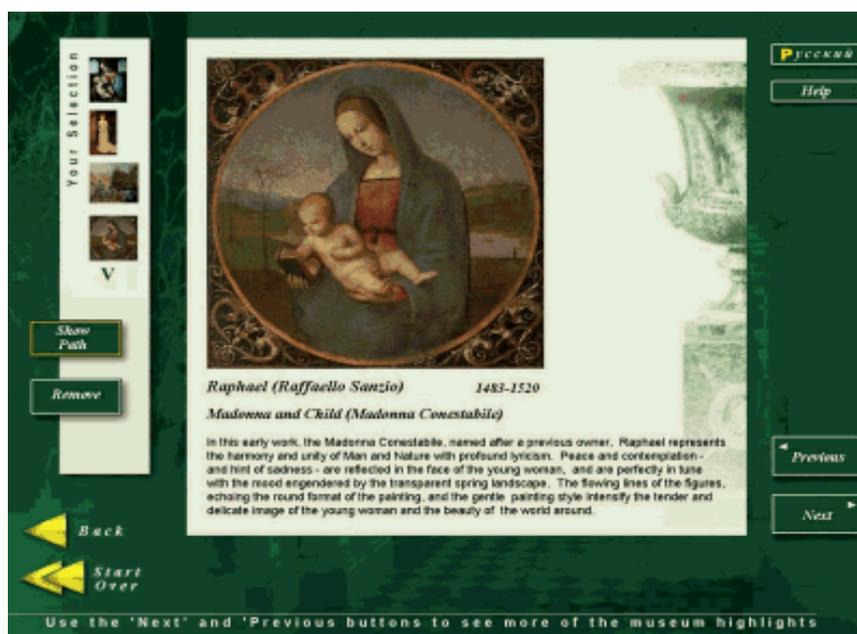


Figure 3: A touch screen from an information kiosk at the Hermitage Museum of St Petersburg (Source: photo by A. Tzanavara, taken during her in situ visit at the Museum on 19-21 May 2010).

Discovery Rooms

In recent decades, museums internationally have been applying an outreach policy, seeking to approach visitors and invite them to *discover* their works of art, in order to develop a meaningful communication between museum audience and museum exhibits.

As a result, discovery rooms were created, offering open access to the public, presenting museum collections in a highly interactive way, where visitors can enjoy themselves, touch and *explore*, study and learn, in a comfortable, relaxed, family-friendly environment [6], which promote knowledge acquisition through interaction [7]. As Danilov mentions, discovery rooms help visitors to get acquainted with museum collections through interesting, playful activities [8].

Tactile objects, three-dimensional models and casts, embossed interactive maps, graphs and pictograms, educational interactive digital applications, specialised software for assimilating museum information through games, audio-visual and multimedia systems, especially designed for the museum education purposes of all ages, ensure to the visitors unique learning experiences.

CONCLUSIONS

Multimedia applications have helped to provide a more enjoyable museum learning experience and furthermore, they have helped museums to provide the *value for money* that visitors expect. Nevertheless, audio-visual equipment should not be the first priority. It can be used to improve museum communication and for educational objectives to be presented to the visitor in a more effective, user-friendly manner by enriching the typical museum documentation with supplementary interpretation tools for better understanding of the messages presented by museum exhibits.

Museum aims and initiatives should go beyond technology within exhibits and installations. New technologies should be used pervasively to create interactive cultural environments for all visitors throughout a museum, as well as providing remote experiences for those who cannot - for many reasons - have a physical presence in it.

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