

From physical to virtual space: new technologies in the experience of visiting gardens

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Objectives | According to the Florence Charter, any historic garden is designed to be seen and walked around. It is thus clear that the essence of a garden is only holistic and fully realized when the assumptions underlying the reasons for creating it – use, experience, and experiment – are fulfilled, and until now these have mostly been achieved in the physical space itself, in person. Given the specific characteristics of this type of tourist attraction, which motivates in-person visits, the physical experience of appreciating these spaces is irreplaceable (Silva & Carvalho, 2023). However, this may not be the only way. The use of new technologies in tourism has led to a revolution in the way visitors access information and acquire knowledge about, participate in, and relate to the physical spaces they visit (Andrade & Dias, 2020). Moreover, "smart" and "digital" destinations or attractions are at the forefront of sustainability and accessibility (Buhalis, 2020). Many digital possibilities have been developed for mobile devices, particularly mobile phones, which are now an integral and essential part of any daily activity, be it work or leisure. The context of COVID-19 has in some cases awakened the need to implement such technologies, and in other cases it has accelerated their use. This study seeks to find out about the digital technologies and innovations that a selected group of historic Portuguese gardens, considered major tourist attractions, make available to their visitors, how they are adopted and used and the characteristics of the experience they provide.

Methodology | This exploratory study took as its starting point the responses from the questionnaire survey applied to the owners or managers of these gardens at the end of 2021 (Silva & Carvalho, 2023). Subsequently, the technique of non-participant observation was adopted using the internet as a source of information, specifically the websites of the more-or-less 40 gardens selected.

Main Results and Contributions | Technology and digital tools were already part of the strategies used to approach the cultural and landscape heritage of some historic gardens before the outbreak of the pandemic. This is the case, for example, of Quinta da Regaleira, which developed an

augmented reality application, Regaleira 4.0, in 2017 (Andrade & Dias, 2020). The results of the questionnaires revealed that most of them either did not have this type of strategy or they implemented it as a result of this specific context. However, in the case of the 360° virtual tours, these were reinforced, and the guided virtual tours were mainly employed due to the pandemic. With regard to augmented reality, only one garden implemented it in the wake of the health crisis. According to the research carried out on the websites of these gardens, only around 25% have solutions that allow digital visits from anywhere other than the garden. Most of them use virtual reality, including virtual tours and 360° tours with narrative videos, images and multimedia content. Fewer in number are the gardens that offer digital experiences in the space as a complement to the physical visit. Examples include applications with and without augmented reality, whether or not the mobile device's camera is pointed at marks or QR Codes, which allows: i) visualizing multimedia content such as text about and images of various plants and/or collections in the garden, as well as narrative videos and audio; ii) following routes based on pre-defined routes or creating your own routes; iii) getting information about the distance to travel to find a particular species; iv) taking selfies with historical characters in augmented reality; v) accessing interactive quizzes with various challenges and questions; vi) playing virtual geocaching where visitors can search for treasures and even win prizes. Two groups of gardens can be distinguished in terms of their use of technology. One group uses virtual tools that are more basic and only allow visitors to tour the spaces and obtain some extra information about the associated botanical and cultural heritage. A second group has developed digital experiences that provide a more direct, informed, and stimulating connection between visitors, the site, and the heritage present there, involving them in the construction of their own visit experience.

Limitations | The exploratory nature of this study prevents generalizations, and the lack of updated online information may have an influence on the results.

Conclusions | Virtual space is gaining relevance as a complement to physical space, as far as tourism is concerned. In this way, virtual visits to heritage sites are increasingly used as a solution to differentiate and enrich the visiting experience, and are becoming commonplace. A physical visit to the gardens is irreplaceable, but it can even be enhanced with the use of new technologies and digital media so that visitors can get the most out of their heritage and contribute to the dissemination of knowledge and awareness of these spaces. This study makes a further contribution to our knowledge of the upgrading strategies that have been developed in Portugal's historic gardens, as well as providing an insight into the use of new technologies in the context of the garden visit experience. In addition, it could be a useful starting point for future assessments of users' perceptions of the use of technology, and how and to what extent it contributes to the visit experience.

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