

Information and communication technologies for the social appropriation of cultural heritage

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ABSTRACT: In this article, the authors present and discuss significant findings that can guide the adoption of technological tools to social appropriation of cultural heritage. From a literature review, they inquiry about the trends and possible lines of work in relation to the knowledge, dissemination and preservation of heritage assets through different types of technologies. The outcomes highlight the use of virtual reality, augmented reality, 3D modelling, among other emerging trends, such as gamification, mobile learning and digital narratives. The contributions and possibilities offered by digital technologies in educational processes have arisen, and the need to continue researching their contribution to the development of training proposals in virtual environments to link people with their cultural heritage.

INTRODUCTION

The rescue and conservation of cultural and intangible heritage has been a topic of growing interest for different organisations in recent decades. Thus, many institutions have become involved in the development of proposals that promote respect for the architectural assets and cultural manifestations of social groups. From the conventions and agreements led mainly by the United Nations Educational, Scientific and Cultural Organization (UNESCO), policies have been designed to manage and safeguard cultural heritage in all its manifestations [1-3] to contribute in the enhancement of heritage, and thereby offer new destinations of interest worldwide.

It is increasingly common to find places with an offer focused on heritage within the catalogue of tourist sites, therein demonstrating the importance of making joint efforts for the recovery and promotion of architectural assets to bring visitors and residents closer and closer to the local heritage. Consequently, there is a need to consider heritage closer to people, as it is part of their daily life, and when it is assumed as their own, it acquires value and meaning to be preserved and disseminated over time [4][5]. However, for this to materialise, it is necessary to change the way heritage is viewed, and make it a collective responsibility based on actions oriented towards its knowledge, enjoyment and appropriation.

In this context, the social appropriation of heritage is conceived as the recognition that social groups make of their cultural assets and practices in order to consolidate them as pillars of memory and sustenance of their identity [5]; making, the heritage useful for improving the quality of life throughout the enhancement, enjoyment and positive instrumentalisation; guaranteeing, its protection, communication, and sustainability over time.

Thus, information and communication technologies (ICT) have become a key element for the dissemination and preservation of heritage assets, as these tools have made inroads into different areas of our lives, changing the way the people interact and also how they consume goods and services. It is evident that in the last year digital technologies have become the major support of economic sectors around the world as a result of the pandemic produced by the Covid-19. Particularly in the educational sector, institutions resorted to e-learning and to develop contingency plans in order to give continuity to training processes around the world supported entirely by various technologies.

The context in which the research from which this article is derived is the city of Santa Cruz de Lorica in Colombia. This research seeks to validate the contribution of digital technologies in the design of models focused on the experience that people have to know, enjoy and disseminate the heritage in its various manifestations. It also aims to provide a general framework for approaching heritage assets as opportunities for development based on their knowledge and enhancement. To this end, a literature review is presented, where some trends and lines of work emerge that include the use of various digital technologies as a support for strategies aimed at the appropriation of cultural heritage.

CONTEXT OF THE STUDY

Colombia has engaged in multiple endeavours aiming to protect its cultural heritage, long before being part of the UNESCO Convention [6]. In 1983, the country agreed to the terms of the 1972 convention, which was later ratified in 2008 [2], achieving worldwide recognition of the heritage assets located in its territory (Figure 1). Thereafter, public policies have been designed for the recognition and preservation of Colombian heritage, spanning from tangible assets to the cultural manifestations and expressions of groups and communities.

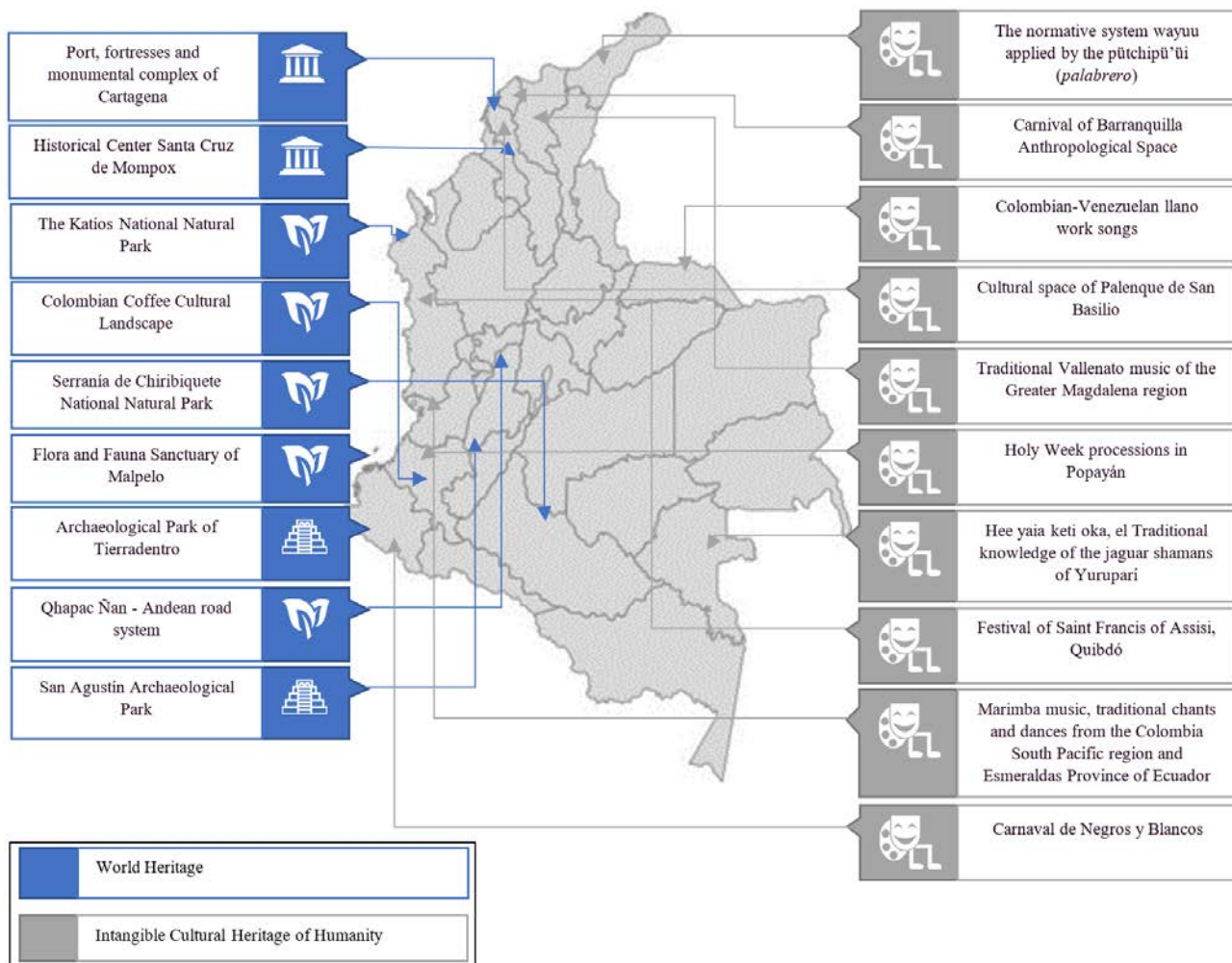


Figure 1: Elements on the Lists of Cultural Heritage recognised by UNESCO in Colombia. Elaborated from information published by the Ministry of Culture [7].

In this direction, the country's progress has been focused on the promotion of research processes oriented towards the revitalisation and social appropriation of heritage, as a strategy for the recognition of its importance in the social development of communities. The biggest challenge has been getting citizens involved in the construction of joint strategies for the appropriation and conservation of the heritage found in their localities. In this context, the main experiences in the country can be mentioned.

In 1992, the Workshop Schools programme began in this country, articulating efforts between the National Learning Service (SENA) and the Colombian Institute of Culture, now called the Ministry of Culture, to train young people and adults in traditional trades [8]. Subsequently, in 2011, the programme was extended seeking the social appropriation of cultural heritage and the creation of cultural industries through training and offering opportunities to vulnerable social groups. Currently, there are Workshop Schools in eight regions of the Colombian territory, where young people are trained and apply cultural entrepreneurship as a source of economic and social development [9].

Starting in 2010, the Colombian government implemented the Productive Transformation Programme (PTP) to boost different sectors in the country. Thence, the Tourism Network of Heritage Towns (RTPP - *La Red Turística de Pueblos Patrimonio*) was created as a national strategy for sustainable development, appropriation of heritage and participation of municipalities that have greater historical and tourism value, and thus consolidate themselves as models of local development [10]. This strategy has allowed the international recognition of the attractions that these municipalities have, increasing the influx of travellers interested in their cultural assets and manifestations. This has become an important factor to encourage the development of different sectors of the economy in these localities.

Indeed, the city of Santa Cruz de Lorica, where this study is focused, is one of the municipalities that is part of the network of heritage towns in Colombia and is located in the department of Córdoba in northern Colombia. It is known nationally as the *Old and Lordly City*, which documented history states that its first settlement was moved on 24 November 1776 by the Spaniard Antonio de la Torre y Miranda from Gaita Island to a higher place on the flood zone of the Ciénaga Grande. The name of this town is possibly due to the fact that the island was initially governed by the cacique Orica of the Zenúes Indians who inhabited the region in the 17th Century [11][12].

In the middle of the last century, Santa Cruz de Lorica consolidated itself as an important river port and a place of economic exchange in the livestock sector and agricultural pantry in the valley of the Sinú River. The large influx of Turkish, Syrian and Lebanese traders generated a cultural exchange and the fusion of the republican architectural style with the vernacular, Mudejar, Andalusian and Arabic styles that is still maintained. Such architectural and cultural richness led to its declaration as architectural and cultural heritage of the country in 1995.

According to the latest inventory of Cultural Heritage and Natural Sites conducted in 2016, the municipality of Santa Cruz de Lorica has 22 assets of cultural interest (BIC), 35 manifestations of intangible cultural heritage (ICH) and three sites of natural tourist attraction [10]. However, this information is little known by the inhabitants of the municipality and other inhabitants of Colombia, evidencing that although from official institutions plans are designed for the dissemination and conservation of local heritage, most of the time these indicators are reduced to figures or investment percentages in development plans, without a greater impact on the appropriation of local heritage. Moreover, some indicators associated with the cultural offer show that the efforts made by the public and private sectors in relation to the implementation of projects aimed at the conservation, safeguarding, management, dissemination and enhancement of heritage as a driver of local development should be reviewed.

Following the above, the interest of this article has focused on finding theoretical, didactic and methodological elements to guide the approach of training proposals in virtual environments, aimed at giving meaning and value to heritage assets in all their manifestations, so that locals and strangers can recognise them and make them sustainable over time. Along with the natural wealth of the people, their heritage is considered one of the most important assets to achieve development alternatives, positioning and competitiveness.

ICT FOR HERITAGE APPROPRIATION

In recent years, ICTs have had a great impact on different areas of life, modifying the forms of communication, interaction and access to knowledge. As occurred in many other training fields, in education for the social appropriation of heritage, proposals have been developed that include digital technologies as a tool for the dissemination, revaluation and preservation of artistic and cultural assets and manifestations, whereby it is of interest for this study to review some experiences that are considered more representative in this area.

Regarding the use of augmented reality (AR) and gamified experiences in museums and archaeological sites in the United Kingdom, Angelopoulou et al developed a mobile application for students, visitors and researchers to take tours of the British Museum, specifically focused on the archaeological pieces of Sutton Hoo [13]. As the developed environment proposed challenges and interactive games, while understanding the historical context through the possibilities offered by simulated environments for learning about archaeological artefacts.

In Korea, based on 3D modelling and the use of it, Han et al conducted a study to restore through digitised content some sites of heritage and cultural interest [14]. The development of the project contemplated the use of applications to create hybrid scenarios, where real data and simulations were mixed with information related to the site in which it was located or on which the camera of the devices was focused. The use of these technologies opens up possibilities for users to access information about cultural heritage sites without resorting to history books, showing a new approach to preserving heritage in the long term.

Researchers Ott et al from the Istituto per le Tecnologie Didattiche in Italy, used technologies in the access, appropriation and dissemination of intangible cultural heritage [15]. They analysed the impact of a project called i-Treasures, whose results allow positioning digital technologies as enabling tools for learning intangible cultural heritage and leave as a challenge the development of human-machine interfaces in innovative systems for learning heritage from educational experiences enriched with technology.

Meanwhile, De la Peña et al applied mobile technologies in heritage education, making use of m-learning to generate learning experiences aimed at the recognition and appropriation of the cultural heritage of Madrid in Spain [16]. Their findings show that the use of mobile technologies, especially m-learning, has a positive impact on the appropriation, recognition and perception of people towards their heritage. This experience positions digital technologies applied to education as a valuable resource in the design of dynamic teaching and learning environments, where people can feel close to their cultural heritage and sensitive to the problems that threaten its conservation.

In this same context, Ibáñez-Etxeberria et al made an analysis focusing especially on those successful experiences, where ICTs were an important factor in heritage teaching and learning processes to make known the role that these tools can play

in heritage education models [17]. Proposals were identified in the use of mobile technologies based on AR, the use of QR codes and the generation of collaborative spaces for heritage learning with interactive Web 2.0 resources.

In Greece, Grammatikopoulou et al carried out a study focused on the learning and transmission of intangible cultural heritage creations through games [18]. The experience is novel because gamification is used as a tool for the transmission and preservation of artistic manifestations that are of collective interest or are at risk of disappearing. In this line of work, through an experience in archaeological museums, Vrettakis et al created an applications for desktop and mobile devices that allow the creation and reproduction of stories in an intuitive, fast and creative way, using mobile digital storytelling in intangible cultural heritage environments [19]. Based on this experience, other forms of interaction and cooperation are envisioned to achieve the appropriation of cultural assets and manifestations through the creation of digital content.

In Latin America, specific research was implemented for the conservation of pre-Hispanic iconographic heritage in Peru [20]. The outcomes of the project demonstrated that ICTs contribute to the strengthening of identity and the revaluation of local culture through the responsible and sustainable use of its heritage. In Mexico, an AR and situated learning experience was carried out to bring students closer to the knowledge of cultural heritage [21]. It highlights the importance of cultivating interest in young people in preserving their cultural legacy and the contribution that digital technologies can provide to heritage education in this regard.

In Argentina, Rabanaque et al conceived the museum as a pedagogical and scientific space to articulate research, ICT and learning of knowledge associated with heritage [22]. The results of the project show the importance of articulating digital resources in experiences outside the classroom, achieving positive impacts on learning and generating added value in proposals for heritage teaching.

In the national context (Colombia), there are few research studies that linked the use of digital technologies with the teaching and learning of heritage; however, the existing ones provide valuable elements as possibilities of integration of these tools in the educational context. In this regard, Hincapié and Zapata used AR to make tours of the architectural heritage of the city of Medellín [23]. The study contributed to the knowledge of heritage assets from new learning experiences. The results coincide with a research based on emerging technologies developed in the city of Cartagena de Indias [24], since the studies contribute to the knowledge of heritage assets from new learning experiences.

In Córdoba, research was developed with the objective of raising awareness of the value of cultural manifestations of ethnic minority groups [25]. The proposal was based on the use of digital resources as support for activities focused on the promotion and awareness of topics associated with the ethnic and cultural diversity of the Sinú Valley; additionally, it was possible to include references of ethno-education in the school curriculum and the cross-cutting use of didactic methodologies for art and narratives using ICTs.

Likewise, the study by Arango et al started from a documentary review to learn about the contribution of ICTs in the teaching and understanding of cultural heritage [26]. The analysis shows that it is possible to use technological resources as an integral part of the training processes, since many devices are part of the daily life of today's students. The report provides as a task the analysis of emerging scenarios, where digital resources are articulated with the teaching and learning processes of national heritage. Similarly, Díaz et al made an analysis of studies published in different scientific databases to support the creation of an educational model for teaching history, relying on games and the use of virtual reality [27]. Their results show that the inclusion of technologies in educational processes generates positive transformations in motivation and in the way that students access heritage knowledge. These findings are consistent with the results of Echeverri et al who show a growth in the incorporation of ICT in learning and teaching processes of topics associated with heritage, so it is necessary to take advantage of the full potential that these tools can offer [28].

CONCLUSIONS

The aforementioned references confirm the great possibilities offered by digital technologies in the educational scenario, especially in the field that summons us, which is the learning, recognition and appropriation of cultural heritage. Therefore, opportunities are emerging for the design of programmes that integrate digital resources to recreate environment for the situated learning of cultural heritage and the transcendental events that have changed the history of social groups.

The greatest advances in this line of research focus on learning experiences in museums and heritage knowledge using virtual reality technologies, AR, 3D modelling [13-15], [21-24]. In addition, emerging trends based on gamification, video games [18][26], m-learning [16] and digital storytelling are noted [19][24]. All these tools offer new ways to better understand the transformations that heritage has undergone over time, thus making people recognise it, and give value to its legacy, ensuring its transfer to future generations [19].

Correspondingly, it is possible to affirm that ICTs play a determining role in educational processes, given their potential to generate new forms of interaction between teachers and students, not only as consumers, but also as creators of

content for heritage appropriation [26][28], given the trends described (Figure 2). However, although these tools can be fundamental in the innovation and improvement of teaching and learning processes [29], it is necessary to integrate them in an intentional and pertinent manner in such processes, since only the adoption of technology does not guarantee successful results [30].



Figure 2. Trends in the use of technology for the appropriation of cultural heritage.

Conclusively, the findings of this research review confirm the need to validate the contribution of digital technologies to training programmes oriented towards the dissemination, revaluation and preservation of heritage assets. The use of technological tools in heritage education will be decisive in the new training scenarios to come, since from now on virtuality will be the most effective way to access knowledge due to the limitations of face-to-face models, which have deepened as a result of the pandemic. Due to this, the communicative and informational potential of ICTs, as well as their contribution to educational processes for the social appropriation of cultural heritage, needs to be analysed.

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