Didáctica Geográfica nº 18, 2017, pp. 307-312
ISSN: 0210-492-X
D.L: M-3736-2014

"LA MARJAL" FLOOD PARK (ALICANTE, SPAIN) AS A EDUCATIONAL PROPOSAL FOR THE INTERPRETATION OF THE FLOOD RISK AREAS

Álvaro-Francisco Morote Seguido

1. INTRODUCTION

The socio-economic development of the developed countries since the second half of the twentieth century has generated many functional changes, lifestyles and the transition to a society based on industry and services. Spain, and more specifically the Mediterranean area, is a clear example of this. This area has become one of the residential zones of the so called "sun and beach tourism" par excellence in the Mediterranean Europe (Morote, Hernández and Rico, 2016; Olcina and Vera, 2016). This has led to an increase in the population's exposure to flood risk (Pérez-Morales, Gil-Guirado and Olcina-Cantos, 2015), including the intense urbanization and occupation of flooded areas. It is also worth mentioning that along with socio-economic development and lifestyle changes there has been a loss of the territory culture and its socio-natural dynamics, even more so, in coastal areas where foreign population (from the center and northern Europe and who does not know the natural characteristics of the territory where the settled is) has bought a house for residential reasons (Membrado, 2015). The urban occupation of floodplain, and a society that ignores the natural functioning of the territory, and this case, the risk of flooding, has become one of the causes that have aggravated these dangers in the Mediterranean area.

Several studies indicate that the use of the textbook and the classical expository methodology continue to be predominant in the secondary classroom of social sciences (Martínez, Valls and Pineda, 2009), and especially in the Geography of the Secondary School (De Miguel, 2013), with the effects that it has of becoming an arduous, extensive, complex and, consequently, unattractive subject for the students. Facing this, there are different contributions that encourage the concept of creative class that in the case of

Geography is essentially conditioned by constructivist presuppositions (Roberts, 2011). One way to break school routines is the use of field trips and the interpretation of the territory due to its novelty, diversity, support in visual and dynamic resources that make the Geography a more attractive subject and in which the students are motivated for learning. For this reason, the field trips become a didactic resource of vital importance to achieve an active methodology.

Numerous authors have highlighted the indisputable didactic potential of the field trips in the teaching of Social Sciences in general and Geography in particular (Sánchez, 1996; Marrón, 2001), agreeing that the visit to the territory offers to the students a possibility to understand this subject and meaningful learning through field experience. For example Crespo (2012) describes the potential of a didactic itinerary to interpret the physical elements of the landscapes of the *Sierra de Guadarrama* or, as González and García (2004) show in the Colombian case with the interpretation of the urban environment and its didactic implications. For this reason, as Martínez Fernández, Fernández-Vega Peláez and Molina de la Torre (2015) explains, an itinerary on the interpretation of the geographic space becomes a didactic resource of the first order.

2. OBJECTIVES

The objectives of this research are: a) to propose the visit of an Public Park (the Flood Park "La Marjal" of the city of Alicante) as a resource and didactic proposal for the interpretation of flood risk spaces; b) analyze how this space and the field trip could contribute to a better knowledge of the current dynamics, processes and problems of the geographic space; and c) to disseminate this public space as a didactic example, not only in the primary, secondary and university educational level, but also as a didactic resource for the society in general as a strategy to increase knowledge about flood risks.

The work presented is part of the motivation to present one of the few examples in Spain on the explanation of the mitigation and emergency of the flood risk's events. But in addition, this park not only remains in the mere explanation of the risk of flood, also offers many more didactic possibilities such as knowledge of the territory (urban dynamics, vegetation, wildlife, landscape, etc.), of true value and meaning for the teachers, both Geography and Social and/or Environmental Sciences, who want to innovate in their teaching style, methodologies and to put into practice what is seen in class. This is due to the fact that in the city of Alicante, the main natural hazard, more repeated, with greater material and human damages, and the one that has been given the greatest economic attention to mitigate it, are floods. In this sense, it is worth recalling the last three severe torrential rains with serious effects in the city such as the episodes of 1982, 1987, 1997 and the recent of March 2017.

3. THE FLOOD PARK "LA MARJAL". AN DIDACTIC EXAMPLE FOR UNDERSTAND AND INTERPRETATE THE FLOOD RISK EVENTS IN URBAN AREAS

The Spanish Mediterranean coast has been one of the areas where socio-economic and urban dynamics have been important during the last decades. The city of Alicante is a clear example of this (Morote, Hernández and Rico, 2016). Capital of the province and a tourist and service city, Alicante has become one of the main tourist destinations of the Spanish Mediterranean, which not only forms part of the city itself but extends along the entire provincial coastline (Olcina and Miró, 2016; Vera and Díez, 2016). The urban growth that this city has experienced since the 1960s and 1970s, and in recent years, coinciding with the housing boom (1997-2007) has had a dramatic increase in housing (186,516 households) (INE, 2011) and population (328,648 inhabitants) (INE, 2016) and occupation of floodplain areas (Pérez-Morales, Gil-Guirado and Olcina-Cantos, 2015).

Starting from these brief reviews on the socio-economic and physical-ecological characteristics of the environment of the city of Alicante, an initiative emerged of the part of the Alicante City Council and the company of water supply (*Aguas Municipalizadas de Alicante, Empresa Mixta -AMAEM*), for the creation of a landscaped public space destined as "floodable deposit" to mitigate flood problems in an urban area of the San Juan Beach (north of the city of Alicante) known as "Alicante Golf" (Hole 1). This proposal (mitigation of the risk of flooding and rainwater harvesting) is one of the measures that have been taking place in other European cities for years and, despite the fact that in Spain its implementation is scarce, the city of Alicante has become in a reference in the model, management and initiatives to mitigate the risk of flood and the use of these water (Hernández et al., 2016).

This infrastructure has operated on few occasions. In this sense, since its operation in April 2015, in that year only were stored 3,500 m^3 (autumn months) (7.7% of the total capacity) (Morote and Hernández, 2016). In 2016, it only operated during the October rains in which 3,000 m^3 were collected coinciding with a rainfall event of 20 liters in half an hour, while with the rains of March 13th 2017 (150 liters/m^2) the park was flooded and closed to the neighbors due to the collection of 15,000 m^3.

The purpose of this public space as a didactic example is multiple:

1. This park can help to analyze and understand the urban environment of the city of Alicante, ie its socio-economic dynamics (shifting from a rural economy to a service-based economy, and more specifically tourism).
2. It would help to understand why flood risks occur, that is to say, once it has been known that there has been urban growth and increased exposure of the

population to this danger by the occupation of floodplains. All this, relating it to the Mediterranean climatic characteristics that, in relation to the rain, are characterized by a concentration in the late-summer months and, in addition, a strong hourly concentration. With this, it is possible to analyze aspects related to the Planning of the Territory and to show how has been the urban occupation of this space.

3. It is a didactic space with different points and different information panels where it explains how the park is flooded and the areas that would be flooded with the maximum level of capacity (45,000 m^3).
4. This space becomes a good example of how to act in case of emergency and evacuation thanks to the system of video surveillance and alert (loudspeakers that emit sounds and alert calls) in case when will are produced an arrival of the runoff before an episode of torrential rains. With this, the population can obtain valuable information, environmental culture that will allow it to be less vulnerable to a flood event, especially in the younger cohorts as they are the generation that should transmit this knowledge to future generations the perception and experience on these risks before the loss of the culture of the territory.
5. Finally, in fifth place, it is a green space with numerous plant species and Mediterranean wildlife in which there is expository information throughout the park so it may be interesting to explain the theory that is seen in class on matters related to Sciences Environmental.

Educational level	Activities	Evaluation
Primary school	***1º-3º course*** - Walk by the park to see how this space could flood and analyze the characteristics of the landscape (flora and wildlife) - Simulation of how to act with an episode of flood (what to do and not to do)	***1º-3º course*** -Simple drawing of the operation of the park -Didactic games (with cards, for example) with multiple answers that the student must choose in relation to the actions to be carried out in front of an episode of torrential rains
	4-6º course - Walk by the park to see how this space could flood and analyze the characteristics of the landscape (flora and wildlife) - Simulation of how to act with an episode of flood (what to do and not to do)	***4º-6º course*** -Manual mapping of the operation of the park and surrounding area (urbanized area, *Huerta de Alicante*) and the effects of flood risk in the area analyzed -Taking a summary table of what to do and not do before a flood

Secondary School	***Compulsory Secondary Education*** -Walk by the park to see how this space would flood and analyze the characteristics of the landscape (flora and wildlife) - Simulation of how to act with an episode of flood (what to do and not to do)	***Compulsory Secondary Education*** -Comparison and making cartography by hand of the old space of the *Huerta de Alicante* and the current space, affecting the effects of floods -Presentation of a written report of the field trip during the visit to the park
	Baccaulaureate -Walk by the park to see how this space would flood and analyze the characteristics of the landscape (flora and wildlife) - Carried out around to see how the occupation of the territory has taken place - How to act with a flood episode (what to do and not to do)	***Baccaulaureate*** -Comparison and making cartography by hand of the old space of the *Huerta de Alicante* and the current space, affecting the effects of floods -Presentation of a written report of the field trip during the visit to the park -Oral presentation of the field trip during the visit to the park
University Studies (Grade, Master)	-Walk by the park to see how this space would flood and analyze the characteristics of the landscape (flora and wildlife) - Carried out around to see how the occupation of the territory has taken place - How to act with a flood episode (what to do and not to do)	-Comparison and making digital cartography of the old space of the *Huerta de Alicante* and the current space, affecting the effects of floods -Presentation of a written report of the field trip during the visit to the park -Oral presentation of the field trip during the visit to the park -Proposal of solutions and alternatives to mitigate the effects of floods in the analyzed area

TABLE 1. Proposal activities and evaluation to do during the visit of the La Marjal Flood Park. Own ellaboration.

4. CONCLUSIONS

The didactic example presented here is a resource that could help to understand the problems and/or threats that may be suffered in urban spaces and the population. Since its operation in 2015, "La Marjal" Flood Park is already being visited and is considered as a resource of great educational value as evidenced by the field trips made in the Degree of Geography and Territorial Planning and in the Master in Planning and Management of Natural Hazards of the University of Alicante and even guided visits such as the one carried out during the X International Congress of the Spanish Association of Climatology held in October 2016 in the city of Alicante. Teaching example that can also be observed in the same geographic space (former *Huerta de Alicante*) as is already being done with visits to the dam of Mutxamel in the Monnegre River by students of the

last year of the degree of Engineering in Industrial Design and Development Of Projects (Polytechnic University of Valencia), with the objective of elaborating a work degree whose protagonist will be the hydraulic infrastructures of centuries XVI-XVIII.

With this didactic example have been provided the main guidelines to be taken into account when preparing school didactic routes for the study of geographic contents, and the materials and planning that accompany them, as well as making available to the educational community of Alicante a series of itineraries on which to "guide" the teacher (to contribute to transmit and teach their students) in the territorial recognition of their closest geographical space. This could allow students to improve their understanding of the urban phenomenon and thus to analyze the most important social and environmental problems in order to understand the dynamics of societies and to be able, as future citizens, to deal critically and compromised the fundamental problems that are happening, in this case, in the city of Alicante.