

THE USE OF PHOTOGRAPHY TEACHING AS A RESOURCE FOR THE INTERPRETATION OF TERRITORY IN THE CLASSROOM: THE POTENTIAL OF GEOPHOTOPIEDIA

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1. INTRODUCTION

From its origins in the mid 19th century, photography has been used by different scientific and humanistic disciplines, serving as a way to document and investigate the different processes and phenomena occurring along the Earth. The relationship between landscape and photography continued throughout the rest of the nineteenth century; during the colonization of Africa and Asia. The major European nations made huge photographic works for anthropological research (Ryan, 1994). The first scientific studies that use photography as a tool began in the colonization of the current territory of the United States, identifying the appropriate route for the transcontinental railway routes, (Bell, 1869, in Webb, 2010) or illustrating geologic characteristics of the Earth (Powell 1895 in Webb, 2010).

During the 20th century, photography consolidated as a tool for documenting, analyzing and supporting scientific studies, also in geography. That was the goal of Brunhes when he directed the mission of the “Planet Archives” between 1912 and 1930 trying “to establish a dossier of humanity taken in full vital activity at the critical time of one of its most complete economical, geographical and historical “moultin” () that may have ever been known” (Carré, and Métaillé, 2008).

Although with a lower incidence during the 20th century, artistic photography made also an important contribution to portraying the territory. Under different approaches, whether focused on the beauty of the landscape or in certain abstraction, artistic landscape photography evolved throughout the 20th century to the exhibition of 1975 “The New topographies: Photographs of a Man-Altered Landscape” (Webb, 2010).

Photography is a resource linked to the teaching of geography, especially since the generalization of the photography in textbooks, a discipline in which the visual aspects are essential (Driver, 2003). Since the 70s, photographs became regular elements in textbooks, not only in the subjects of geography, but also in other disciplines related to earth sciences or humanities, such as History. In the 21st century the opportunity of the use of web resources in the teaching of geography has been highlighted, and claims have been made that the use of such resources would represent a paradigm shift in teaching and learning (Hill and Solent, 1999). However, in the teaching of geography the importance of using photographs has been increasing from the first half of the twentieth century (Cropper, 1935). According to Costello and Kollodziej (2006), an adequate selection of images for a textbook can prevent text from being excessively abstract. The more complex the subject matter gets, the more photographs are needed and more carefully they should be chosen. Sidaway (2002) made field campaigns in the city of Barcelona, highlighting the capability of photography to bring students of Geography to epistemological and methodological issues that may initially be unknown for them. In addition, some specific techniques associated with photography field, as the repeated picture (Sánchez Escalera and Fraile Jurado, 2015) have been identified as alternative approaches to learning processes (Bass, 2010).

2. PHOTOGRAPHY IN THE CLASSROOM

2.1. Photography in geography textbooks

Since the use of photographs in textbooks became widespread, there has been a noticeable separation between the books of primary and secondary school and university textbooks. Intending to prove this statement, an analysis of the amount of figures and photographs included in several textbooks of Geography was performed, between those considered as representative of different disciplines available in the Library of Humanities at the University of Seville.

Textbooks have a greater amount of figures and photographs, with more than 1.2 images per page, (Table No. 1), almost all university textbooks showed to have fewer figures and photographs per page. Some textbooks were found to have a very low numbers of figures per page (Márquez, 1992; Muñoz, 1992; Santos, 2000). It is noticeable that in some manuals about subjects traditionally related to an important graphic apparatus as geomorphology or Edaphology, figures presented below 0.2 per page ratios. On the other hand, some textbooks exceptionally rich in graphics contents were found, like Pedraza Gilsanz (1996) or Corberó et al. (1993) with around 1 figure per page.

Title	Author/s	Pages	Figures	Photos	Total	Rate
Geografía Económica	Claval	384	132	0	132	0,34
Naturaleza del Espacio Geográfico	Milton Santos	290	1	0	1	0,00
Enseñar Geografía	Moreno Jiménez et al.	373	52	8	60	0,16
Trabajar mapas	Corberó et al	147	145	21	166	1,13
SIG	Gutiérrez Puebla	234	83	0	83	0,35
Geografía Física	Bermúdez et al.	578	373	64	437	0,76
Capitalismo y morfología urbana en España	Capel	142	8	0	8	0,06
Los sistemas urbanos	Ferrer Regales	254	56	0	56	0,22
La península ibérica	Vilá Valentí	317	107	0	107	0,34
Geografía Rural	García Romáin et al.	213	76	0	76	0,36
Geografía General de España, parte física	Vilá y Terán	200	65	0	65	0,33
Geografía Económica	Claval y García-Bosch	361	113	0	113	0,31
Biogeografía y Edafogeografía	Ferreras y Fidalgo	257	43	0	43	0,17
Climatología	Cuadrat y Pita	458	301	15	316	0,69
El clima de la Península Ibérica	Capel Molina	257	72	10	82	0,32
Geografía. Historia y Conceptos	Holt Jensen	199	26	0	26	0,13
Los sistemas agrarios	Dominga Márquez	154	11	0	11	0,07
Los océanos	Juan Luis Suárez	296	59	0	59	0,20
Geomorfología General	Julio Muñoz	348	49	0	49	0,14
Geomorfología. Principios, Métodos y Aplicaciones	Pedraza	387	204	154	358	0,93
Geografía (Bachillerato)	Muñoz-Delgado	381	313	217	520	1,36
Geografía General (Bachillerato)	Juan Redal	341	198	345	543	1,59
Geografía (Bachillerato)	Herrero-Lorente et al.	395	271	208	479	1,21

TABLA Nº 1. Analyzed textbooks.

In order to relate the obtained results with the study habits of students of Geography, a survey with 5 questions (Table 2) was launched. The survey is contained in the address <http://www.surveio.com/survey/d/Z1A5M1H8V1Y6O3V9I>. The survey was answered by 106 students of Geography of Spanish universities during February, 2016.

Questions		Answers				
1	How many hours a week do you study BEFORE exam time?	< 7 hours	7 – 21 hours	21 – 42 hours	> 42 hours	
2	How many hours a week do you study DURING exam time?	< 7 hours	7 – 21 hours	21 – 42 hours	> 42 hours	
3	How much study time do you spend on recommended readings?	<10% of total study time	10% – 25 % of total study time	25% - 50% of total study time	50 – 75% of total study time	>75% of total study time
4	In your high school stage, how much study time did you spend on studying using the textbook?	<10% of total study time	10% – 25 % of total study time	25% - 50% of total study time	50 – 75% of total study time	>75% of total study time
5	What is your main source for studying?	Own class notes	Class notes from other students	Recommended literature	Class presentation	

TABLE 2. Questionnaire made to the students of Geography of the Spanish universities.

On the question of the time spent on consultation recommended for the respective subjects manuals (Question 3 of Table No. 1), the result was that 65% of participants indicated they spent less than 25% of their study time on recommended literature in college. Almost half of these students even said they spent less than a 10% of their study time by means of this source (Figure 1). Just a 9% of the students recognized to spend more than a 50% of their study time using the recommended references, as textbooks.

The results regarding the primary source for studying at university contrast sharply with the one for studying at the highschool. A 55% of students reported having studied more than half of their study time using the recommended textbooks, while only 30% said to have studied less than 25% of the time by hand, when during college a 65% indicate studying by means of textbooks.

A 62% of the survey participants answered that use they their own notes as their main source, which added to the 13% that claim to use notes outside means that 3 out of 4 Geography college students use lecture notes to study as the main source of information (figure 2).

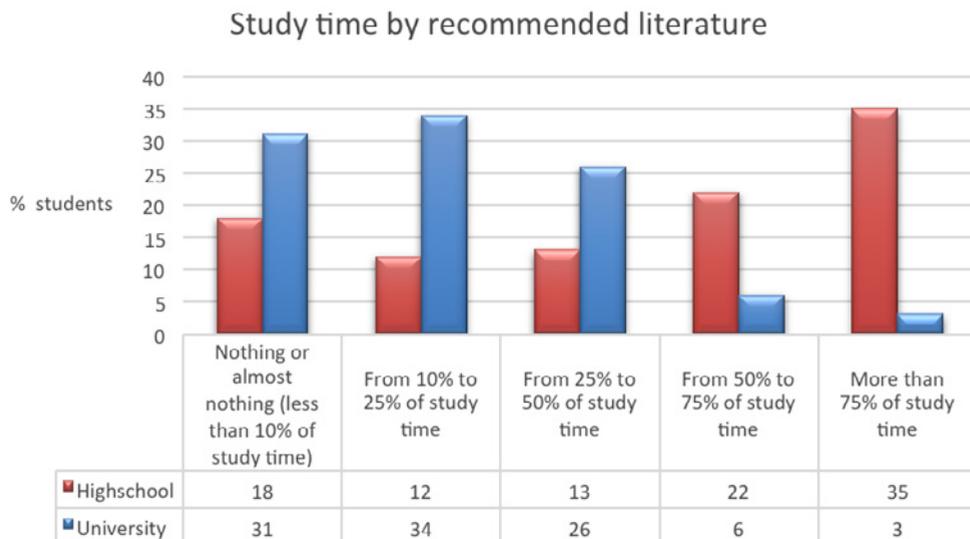


FIGURE N° 1. Study habits of the students of Geography.

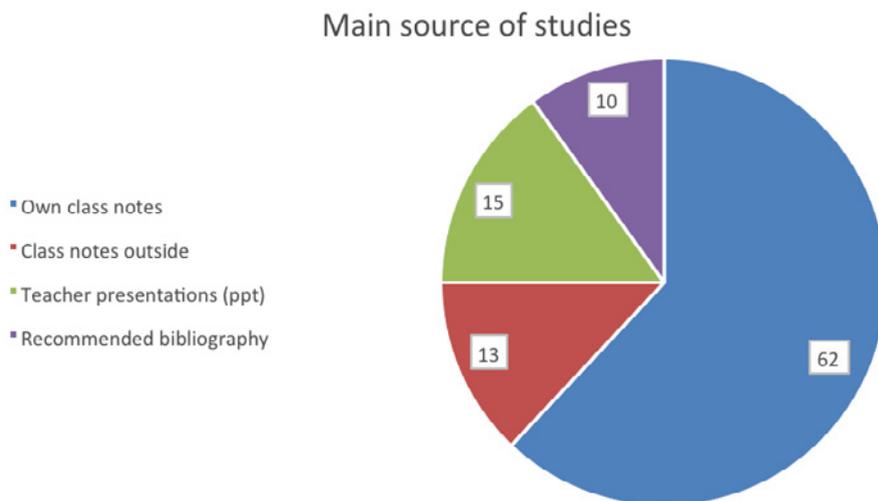


FIGURA N° 2. Principales fuentes de estudio en estudios universitarios de Geografía.

According to the obtained results, it seems that there is a sudden replacement of manual use in high school classes by class notes or presentations when students enter University. While the reasons may be different, the absence of abundant graphic material, and specifically photographs, might lead the students to feel less interested in using these sources.

To clarify this issue, a second survey, which was answered by 70 students from the same population of university students of Geography in Spanish universities, was held. The survey stayed on the website e-encuesta.com (<http://www.e-encuesta.com/answer?testId=mNeGv1cVuWA%3D>).

The question whether the absence of graphic material quality was one of the reasons of using less of the recommended literature got positive answers in a 97% of cases. In the same survey, a 80% of the students of Geography said that university textbooks do not have enough images in relation to the texts.

2.2. The memory of photography in the students

Intending to measure the relevance of the image, whether photograph, diagram or figure in the learning processes of students, a survey among students of the subject Physical Geography of the Iberian Peninsula (1st Grade History) was performed, by asking the question of whether they better remembered certain pages of their manuals High School Geography due to the presence of images in them. The obtained results on a sample of 80 students showed that 69% of them said yes, while only 31% reported not having observed some influence over the presence of images. As it has been emphasized from different schools of pedagogy (Abramowski., 2007; Otero et al, 2003), the use of images in the textbooks should not be casual, and not just necessary for its explanatory power, essential in geography, but also by their ability to set certain images in the students minds and relate the contents.

3. GEOPHOTOPEA USE IN THE CLASSROOM

3.1. Geophotopedia in the current academic context

Geophotopedia of the University of Seville is a repository of photographs of geographic content, geo-referenced and thematically classified by geographers, professionals and scientists. It currently has more than 12,500 photographs, allowing to perform thematic searches, space and thematic / space. All photos are free to use since Geophotopedia uses a Creative Commons license. A complete description of this repository has been published by Palacios et al. (2016) and Fraile et al. (2013).

3.2. Geophotopedia applications in the classroom

Two activities that required the use of Geophotopedia were performed in the subject Physical Geography of the Iberian Peninsula, at the University of Seville. The first one consisted of commenting pics hosted in Geophotopedia. This activity was carried out in two different ways. First, each class began with 20 minutes of photography commentary

in common between teacher and students. In addition, students were asked to make 5 photos commentaries of Geophotopedia to be chosen by themselves as a part of the final mark of the subject, with a value of 20% of the total, following this classical structure:

- 1) Introduction. Presentation of photography and its location.
- 2) Relief. Identification of: a) if it is a young relief, quaternary, Alpine or older, Hercynian, in the case of the Iberian Peninsula; b) whether erosion processes predominate or construction; c) identify, if possible, the type of rock that appears in the photo (sedimentary, metamorphic or igneous) with special attention to the possible stratifications; and d) identify, if possible, the lithology.
- 3) Climate. Climatic variables are the most difficult to identify in a photograph because of the ignorance when the photo was taken. However, the following variables allow to discriminate different territories within the Peninsula: a) identify if the climate –wet or dry–; b) if the temperatures are mild or extreme, either in winter or summer.
- 4) Vegetation. Identification of: a) grass, bushes and tree species; b) water requirements of the vegetation found in the photograph; c) possible explanatory causes of the distribution and structure of plant formations (biogeographical reasons, historical reasons).

The second activity proposed to the students of the subject Physical Geography of the Iberian Peninsula consisted of voluntary participation in the repository Geophotopedia, providing an extra 10% in the final mark of the subject. This activity involved each participating student to upload 50 photographs to Geophotopedia. All the uploaded photos by students were subsequently reviewed by the Geophotopedia staff. The result was very positive, with slightly more than a 50% of participation.

4. FINAL CONSIDERATIONS

Photography is a powerful teaching tool for teaching geography. Most of the Geography textbooks of university education level have an extraordinary lack of graphics, especially photographs. This should lead to a rethinking of the format of geography textbooks for university education.

While there is no absolute evidence that the direct cause for this lack of interest is linked to the obvious poverty figures and photographs in the university textbooks, the change in the sources for studying is so abrupt that is probably one of the explanations of this phenomenon, as reflected in the results of the performed survey. The easiness indicated by students to associate the information studied when it is on pages with photographic content should not be overlooked, although it will require more comprehensive analysis in future research.

Most of the works available in the consulted bibliographic records were published in the late 20th century, with figures and diagrams in black and white and poor use of graphics, proper books of this era. The explanation of this phenomenon might be linked to the decrease in the frequency of new books of Geography (as evidenced by the disappearance or slowing series as *Ariel Geografía*, or *Espacios y Sociedades*).

We have also found student preferences for alternative approaches to the interpretation of the territory, as the photographs commentary both in the classroom and outside it. The existence of a photographic repository as depth and large as Geophotopedia should be considered by teachers of middle and university education as a prime resource when performing these activities. From the standpoint of the study of the territory, Geophotopedia is a very useful tool for its immediacy being a living resource, updated and rigorous, so that its use should be enhanced as teaching material, especially taking into account the apparent abandonment of traditional manuals.