Selecting Photographs from Web Sources for Online Learning Activities. Working with Representations

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Abstract

The research starts from the finding that primary school teachers have difficulties in choosing photographs for online learning activities. In order to investigate these difficulties and their causes, as a primary school teacher, the first author conducted an internet search and chose five photographs for several topics in the field of geography (rural settlements, urban settlements, landforms, running waters, lakes and others). For comparison, another contributor of our research group, with expertise in the didactics of geography research field, chose another suite of photographs. As a result, both similarities and differences were identified based on this comparison. During the discussions with the two researchers, we identified the reasons for choosing the photographs (the considered criteria) and the difficulties. At the end of the research, we spotted several causes that determined the inappropriate choice of photographs for a certain topic.

Keywords: Competence, Landscape, Primary education, Learning concepts, Selection criteria

1. Introduction and Theoretical Background

In the pre-university education system, plenty of photographs are used in order to facilitate the students' understanding of the world, to build representations as truthful as possible, and to acquire knowledge (Dulamă, 1996). Thus, it is generally assumed that photographs are appropriate for the teaching-learning process in primary school (Triacca, 2017).

Previous studies have shown that pre-university teachers have difficulties in choosing photographs due to the absence of photographs related to certain topics, the gap in photographs adapted to the children's age and to the topic of the lessons, and the lack of internet access in some schools (Antal, Dulamă and Ilovan, 2020b, p. 33). However, other studies have suggested that teachers have difficulties in using photographs efficiently (Alenizi, 2015).

Regarding the process of choosing photographs for didactic purposes, in the literature of educational sciences, the classification criteria of photographs as well as some criteria based on which they are selected in particular contexts have been introduced. Therefore, two criteria that

underlie the classification and analysis of photographs have been explicitly stated within the didactics of geography: the place where the photograph is taken and the photographing axis (Dulamă, 2004, pp. 207-208; Dulamă and Roșcovan, 2007; Dulamă, 2010). Concerning the selection of photographs for use in lessons the Romanian literature recommends that the pictures should be well made, clear, simple, easy to interpret, and large (Dulamă, 2001, p. 101). Further, according to Dulamă (1996, p. 95) blurred pictures, loaded with too many details, i.e. those which do not convey accurate geographical messages should be avoided. In this respect, the most important aspect in choosing the pictures is the content (Dulamă, 1996, p. 96) that ought to be meaningful and representative to the studied phenomenon (Dulamă, 2004, p. 111). Dulamă (2004, p. 111) stresses that in educational contexts, the favourite photographs are those which capture impressionable and unprecedented aspects, as well as the colourful ones, which reflect reality more accurately than black-and-white photographs.

According to the latest research studies, primary school teachers tend to take into account certain features of the photographs they use (e.g. content, organization of elements, colour, clarity, shape, details, message, size, photograph plans, compliance with reality, etc.), of the pupil (e.g. needs and interests, learning style and pace, age-specific), of the lesson (e.g. objectives, topic, content, available time, type), and of the intended effects derived from their use (e.g. understanding the topic, identification of the items/ phenomena/ structure/ characteristics, deduction of connections, generalization) in the selection process (Antal, Dulamă and Ilovan, 2020, p. 26).

Furthermore, on the one hand, the geography students as future teachers seem to be more interested in photographs of "beautiful" natural landscapes instead of photographs of anthropogenic landscapes and those where spectacular natural processes are captured (e.g. tornadoes, landslides, and floods) (Antal, Dulamă and Ilovan, 2020a). On the other hand, some studies have alluded to the photographs from the digital textbooks of *Mathematics and environmental exploration* in Romania, also noticing their high frequency (Buzilă et al., 2017; Dulamă et al., 2017; Magdaș et al., 2017; Ilovan et al., 2018a).

At the university level, studies have focused on the use of photographs in learning about cultural landscapes (Dulamă, Ilovan and Buș, 2016), in developing students' competence to analyse landscapes (Ilovan et al., 2018b), in assessing students regarding territorial planning (Dulamă, Vana and Ilovan, 2016). Moreover, students' skills to research online sources (Ilovan et al., 2015) and visual materials from web sources in studying Regional Geography (Magdaș et al., 2018) have also been analysed.

The aim of this research is to investigate the teachers' way of selecting photographs for didactic purposes. Accordingly, the research seeks to address the following questions: What are the criteria employed by the teachers to select the photographs identified on the Internet for a particular topic? Which difficulties do teachers face in the process of identifying and selecting photographs? What are the mistakes teachers make in selecting photographs? Several steps were followed in order to achieve the purpose of the research and to find the answers to the questions. Firstly, two teachers selected 40 photographs for specific topics. Then, they analysed the selected photographs. Finally, the teachers analysed the resulting photographs selection process.

2. Material and Method

Participants. In the research, two teachers were involved as subjects: a teacher of primary education, who was also a doctoral student at Babeș-Bolyai University of Cluj-Napoca, as the first author of the research, and a university professor at the same university with expertise in Didactics of Geography, who is the third author of the research.

Research design. The two participants were commissioned to choose five photographs from the Internet, for each of the eight established themes (i.e. village, town, deciduous forest, mountains,

the Danube Delta, road communication routes, running waters, lakes) and then to enter the photographs in a table.

Data Collecting, Procedure and Research Material. Through the interview method, the opinions of the two teachers about the criteria based on which they chose the photographs were collected. In addition, we identified the difficulties they encountered in their choice. Further, the method of content analysis analysed the answers. Visual methods were employed to analyse the photographs. Henceforth, the research material includes the photographs chosen by the two researchers and their answers in the interview.

3. Results and Discussions

3.1. Analysis of the task given to the subjects. The university professor structured the task and the choice of topics. At this level, she took into account the fact that the chosen topics are studied in primary education and that all the concepts proposed for illustration through photographs are used. The designations of the proposed topics represent concepts (i.e. village, town, deciduous forest, mountains, road communication routes, running waters, lakes), except for the Danube Delta, which is a major landform unit in Romania.

At the time the task was submitted only the purpose of the research was specified. The primary school teacher did not previously choose photographs for the topics mentioned above and stated that during the initial and ongoing education, there were not too many contexts for her to learn how to choose photographs for a topic and how to use them during classes for teaching purposes. The university professor chose photographs to present the topics in various contexts: classification of postcards from own collection; studying the topics with pupils in geography lectures; achievement of PowerPoint presentations for students preparing to become teachers for pre-primary and primary education and geography teachers; conducting other research in Educational Sciences (Dulamă, Ilovan and Buș, 2016; Dulamă, Vana and Ilovan, 2016).

3.2. ***Analysis of the criteria for selecting photographs from the internet.*** The teachers selected the photographs based on several criteria related to: photographing (i.e. time and place of the photographing, the photographing axis, author, and purpose), technical characteristics of photographs (i.e. colour, clarity, brightness, format, size), content of photographs (photographed environment, "nature"/origin of the photographed aspects), photograph processing (degree of processing), the relevance of the photograph to the topic.

Photographing criteria

Time and place of the photographing. Both researchers chose photographs taken from the ground, or as bird's-eye-view (aerial) perspective, and not those taken from the satellite, from hundreds of kilometres (aerophotographs). Also, they both preferred aerial photography of rural and urban settlements, of some lakes, of the Danube River, and of some aspects of the Danube Delta. Choosing of photographs within this category is optimal since it offers the possibility of observing a whole or a large part of a human settlement or a lake. In addition, the adjacent spaces could also be observed. In the case of photographs taken from "above" (the mountain peak or mountaintop), component parts of the mountains and some lakes were captured. Still, most of the photographs were taken from the ground, to represent forests, roads, some running water, and some aspects of the delta.

Axis of the photographing. The first teacher chose a vertical photography of an island in the Danube Delta. In some horizontal photos, aspects of the forest and the delta or roads were captured. In most photographs, the photographing axis is oblique (aerial photographs, those taken from a height).

Author and purpose of the photographing. The research did not intend to identify the competence and high expertise of the authors (professional or amateur photographer). Since the

photographs chosen by the two researchers were not included in scientific or art works, we did not consider them scientific or artistic photographs, but photographs targeting the general audience.

Criteria regarding the technical characteristics of the photograph

Colour. The two teachers selected multicoloured photos or other types (e.g. sepia colour) instead of the non-colour ones (black and white).

Clarity. The teachers mentioned that they selected the clearest photographs from those available.

Brightness and the time of photographing. Being chosen by the teachers, who predominantly use photographs for didactic purposes, all the photographs were taken during the day, so that the photographed elements benefited from maximum visibility.

Format. The primary school teacher selected seven portrait-orientation photographs and 33 landscape-orientation photographs, whereas the professor opted only for landscape photographs, motivating that they can be arranged in the table boxes with a more pleasing visual impact, but also on the PowerPoint slides. In addition, the professor preferred the landscape photographs format since childhood when used to collect postcards.

Criteria regarding the content of the photograph

"Nature" (origin) of the photographed aspects. Regarding the proposed themes, it is noteworthy that most of them focus on natural aspects (mountains, running waters, the Danube Delta, deciduous forests, lakes), and only three focus on man-made elements (village, town, roads). Although some anthropogenic interventions were also observed in the photographs where the natural elements predominate, all of the photographs were included in the landscapes category, with the meaning explained in the *Explanatory Dictionary of Language* (DEX, 2009): "part of nature that makes an artistic ensemble and is contained at a glance", "aspect of a certain territory, resulting from the combination of the natural factors with the man-made ones." In the art of photography, landscape photography is considered "scenic photography" or "environmental" photography where both "natural scenes" are photographed which may be either large and grandiose or small and more intimate, as well as artificial ones, such as urban or rural landscapes (Adminul, 2020). Given the fact that landscape photography is one of the most popular, common, and available on the Internet, this represents an opportunity for teachers nowadays because they have a considerable number of options/photographs to choose from.

The photographed environment. As the proposed topics refer to the environmental elements located on the continents, all chosen photographs targeted the terrestrial environment. In addition, underwater photographs and astrophotographs ("astrolandscape") were not chosen because they were considered inappropriate for the topics.

The photographed territory. All chosen photographs represent places in Romania, even if the Google search engine offered photographs from other countries, too.

Criterion related to photo processing (*Naturalness and degree of processing*). The two teachers chose photographs in which the post-processing is not noticeable. However, they identified some interventions at the level of colour intensity made in order to ensure fidelity with the cut out from reality captured in the photography. Therefore, the chosen photographs were included in the category of the original ones and with a low degree of processing. In order to provide pupils the context of analysing the reality represented in photographs, it is important to use photographs that introduce reality as truthful as possible and not counterfeit.

Criteria related to relevance to the proposed topic. To this research, this criterion was the most important in the process of selecting photographs. The term "relevance" is explained in

dictionaries by the terms “meaning”, “significance” (MDA2, 2010), while the term “relevant” is considered as something that “highlights”, “emphasises something”, “distinctive” (MDA2, 2010), “stands out” (DEX, 2009).

First of all, it is worth stressing that to choose a photography relevant to a topic, the teacher should have a very good knowledge of the content of that topic (the essential properties of the environmental components, e.g. those of the mountain; of a geographical system, e.g. of a running water or a lake, and to recognize them in reality or in visual materials, such as photographs, drawings, paintings, etc.)

Table 1 comprises the content elements as the basis of the photographs selection activities carried out by the two teachers. Although the task did not specify that these photographs should be used in primary school classes, both teachers performed the assignment from this perspective. The primary school teacher chose the photographs to facilitate learning at this level. The photographs were chosen empirically, depending on the teacher’s mental visual representations: the emergence of the nucleus of the village; the extent of the town compared to the village; differences in the lane-street-boulevard; the changing in structure of the forest depending on the season; the size of the running waters from the small ones to the large ones; differences in road infrastructure; representative elements for the delta (e.g. water lilies, birds, boat).

The university professor chose the photographs according to the essential aspects for each topic and from a scientific perspective. More than that, she did not take into account either the recipients’ level of education or the content proposed in curricula and textbooks. The professor aimed to make visible the essential features mentioned in the definitions of the terms, the components of the geographical systems, and their types by photographs. If the primary school teacher selected the photographs based on an inductive reasoning, that is from concrete to abstract, the university professor selected them by deductive reasoning, namely from abstract to concrete.

Table 1. Content elements according to which the teachers selected the photographs

Topic/subject	Content elements	
	Primary school teacher	University professor
Village	Nucleus of the village, different organization depending on the landform	Definition, elements of rural settlement (nucleus of the village, estate), types of villages (scattered, nucleated, dispersed)
Town	Characteristics: extent, appearance (streets, boulevards, buildings)	Definition, elements of the urban settlement, types of towns by evolution (differences in the urban landscape: medieval centre, ward of flats and houses, rectangular street network)
Deciduous forest	Structure depending on the season	Definition, types of forests (oak, beech, birch, black locust), stratification
Mountains	Heights compared to hills, composition of hard rocks (e.g. limestone), the shape of the peaks	Definition, components (peak, mountain top/interfluves/ridge, slope, valley), gorge
The Danube Delta	Representative elements: village, Letea forest, birds and water lilies, boat	Definition, hydrographical units and land units, birds, vegetation
Road routes	Highway, poor infrastructure road	Types (highway, expressway, road, street, lane)
Running	From small waters	Components (spring, watercourse,

waters	(stream) to large ones (river); from the local horizon (Iza izbuc) to faraway places	spilling), water types (brook, stream, river), confluence, flood
Lakes	Depending on the relief (glaciers), dam at the reservoir	Types of lakes (volcanic crater, glacier, sea firth, salty)

The two approaches also generated different photographs search strategies. The primary school teacher searched for photographs using keywords in the referred topics (village, town, deciduous forest, mountains, Danube Delta, road communication routes, running water, lakes). On the other hand, the university professor adopted a progressive strategy starting from the concept or theme, but adding words by which the territory was narrowed (from the world to the national level; from the country level to a certain settlement; from a town level to a certain ward), was deepened (for example, from running water to spring, river) and customized (for example, from the category of lakes, to a certain lake).

Table 2. Keywords according to which the teachers searched the photographs

Topic/subject	Keywords (original ones in Romanian)	
	Primary school teacher	University professor
Village	Village	Scattered village, Apuseni mountains, dispersed village, nucleated villages; Viscri; aerial
Town	Town	Town, town Romania, town Romania aerial; Cluj-Napoca ward Gheorgheni, ward Mănăștur, București, Constanța
Deciduous forest	Deciduous forest	Deciduous forest, oak forest, beech forest, birch forest, black locust forest
Mountains	Mountains	Mountains, mountains România, mountains România valley, mountains România gorge
The Danube Delta	The Danube Delta	The Danube Delta, spilling Black Sea
Road communication routes	Road communication routes	Highway, express road, road, street, lane
Running waters	Running waters	Running waters, spring, brook, stream, river
Lakes	Lakes	Lakes, Sfânta Ana Lake, firth

3.3. Difficulties in selecting photographs from the internet

The two teachers faced similar difficulties in the process of selecting photographs and in other contexts, as follows: the large number of available photographs; the poor quality of photographs currently available on the Internet; the absence of the appellation of the place they pose or even the incorrect mention of it (see Fig. 1. Wrong location of the photographed place: The Danube Delta, in Romania, instead of Thailand); the impossibility to take over by copying/downloading; processing and even falsifying photographs (see Fig. 2) in Adobe Photoshop or other applications.

3.4. Mistakes in selecting photographs from the Internet

The fact that teachers face the aforementioned problems may pose a risk in selecting photographs for a particular topic. Consequently, these issues can lead to wrong choices. A student misused the photograph in Fig. 1 on the topic "Danube Delta", due to the fact that there are no pink/red water lilies (*Nymphaea zenkeri*) in this geographical unit but only white water lilies (*Nymphaea alba*) and yellow water lilies (*Nuphar luteum*). The student took the photograph from a site where the Danube Delta was wrongly assigned and, not having adequate knowledge about the vegetation of the Danube Delta, he considered the photo-place association to be correct and therefore did not carry out any checks.

Fig. 1. Wrong location of the photographed place: Danube Delta instead of Thailand. Source: https://romania.tumblr.com/post/116018655372/rolandiatravel-la-poupee-deporcelaine-delta

Fig. 2. Modified photography that does not represent reality. Source: https://www.digi24.ro/stiri/externe/ue/spania-si-portugalia-sub-amenintarea-unui-tsunami-devastator-698514

In order to present the tsunami in class, a geography teacher used a similar photography to that of Fig. 2. A quick Internet search gave us information about the tsunami: "*A series of seismic waves, known as 'tsunamis' and often exceeding 30 meters in height, hit Hokkaido's east coast on Tuesday."* (DCR2, 1997).

If we analyse the height of the blocks in the photograph, based on the estimation of a level or floor at 2.5-3 m, it can be deduced that they have a maximum height of 30 m, and the height of the wave is 2-3 times higher, resulting an unrealistic background. From the analysis of the photographs searched on Google engine using the tsunami keyword, it could be observed that many of them are processed or falsified. However, to verify the authenticity of a given photograph, one solution would be to read the information on the site or page where they were posted.

In some cases where the teachers take the photographs, they mistakenly frame the place they are photographing: for example, only part of a church can be seen (part of the tower); half of the photograph space is covered by sky; part of the photograph is the dashboard of the car from which the photograph was taken; the facade of the photographed building is shadowed; the shining solar disk covers a part of the photograph.

3.5. Causes of incorrect selection of photographs from the Internet

In previous research, it has been emphasized that, in order to be useful in the learning process, photographs should have some characteristics: they should be clear, "the photographed object should be able to be totally seen," "they ought to be large in size, namely to occupy a high proportion of the space in the photograph," "it should be illuminated, not shadowed" (Dulamă, 2014, p. 66).

Lack of a precise educational objective targeted using photographs. If teachers want to show the pupils the villages, they will randomly choose the photographs. Teachers should decide, for

example, what is relevant for pupils to observe in photographs of villages: households located at great distances from each other in a scattered village of the Apuseni Mountains; houses joined by a brick wall in the villages built by the Germans in Romania (i.e. Viscri); or a household with a stable and shed.

Low level of expertise in the field. The higher the level of competence of a teacher in the field he or she is looking for photographs, the more likely he or she is to make a better selection of them. If the teacher has few or poor representations about a place or a subject, he or she has few chances to choose the most relevant photographs to illustrate that subject and to visually substantiate the formation of a concept.

Lack or insufficient documentation. Even if a teacher does not have the necessary knowledge to choose the most relevant photographs for a topic, he/she can do some research. Moreover, even if the same photograph can be found on "a hundred sites", it does not mean that it shows the reality. The teacher should read the text that accompanies the targeted photograph to be certain that it represents what claims to represent.

Taking photographs from scientifically invalidated sources. If the photograph is distributed in several places on the Internet, it is important to identify the original source or a credible one (for example, a specialized site).

4. Conclusions

The most important conclusions we reached at the end of this study are listed below. In order to be able to select the most relevant photographs for a topic, from a large number of available photographs, the most significant aspect is to clearly set the objectives and the person's level of competence correlated to that topic. The low level of expertise in the field and the lack of documentation are the main causes that generate most of the mistakes in choosing photographs for educational purposes.

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