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Communication and environmental conservation: advances and challenges in Latin America

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Abstract

Introduction: This article presents the results of a review of literary works on environmental communication and conservation. **Method:** The study is based on informative and argumentative documentary research (Alfonzo, 1995; Páramo, 2008), related to the analysis and comparison of experiences. **Results:** Communication and environmental conservation is an emerging field of research, which has increased its results in the last five years. The countries with the largest production of such studies are Spain, Mexico and Colombia, which largely address issues related to: pro-environmental behaviours, pro-environmental attitudes and sustainable attitudes. These studies also address issues concerning environmental communication and, to a lesser degree, communication and environmental conservation. **Discussions and conclusions:** Advances in research on communication and environmental conservation include the media actions of environmental communication, the emergence of environmental journalism, and the criticism of the media's catastrophic depiction of environmental issues. The challenges for environmental communicators are to carry out a more educational work in the transformation of habits and the generation of pro-environmental behaviours, and to play a more participatory role in the planning and evaluation of the public policies necessary for the conservation of biodiversity and protected areas.

Keywords

Environmental communication; environmental conservation; pro-environmental behaviours; pro-environmental attitudes.

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Translation by **CA Martínez-Arcos** (PhD in Communication from the University of London)

1. Introduction

One of the greatest challenges of humankind in the 21st century is the creation of production and consumption systems that have a low impact on natural resources, that contemplate social dynamics and, particularly, that do not put at risk the permanence of human life nor the balance of the living organism called planet Earth. Therefore, all disciplines and sciences and by extension universities have the responsibility of producing knowledge that allows humans to lessen the impact of their lifestyle and even to modify the civilising logic that has caused environmental problems (Elizalde, 2002; Estermann, 2012), which are also social problems, and thus require understanding and improving the complex relationship between humans and nature.

In this order of ideas, communication as axis of human dynamics is no stranger to this global crisis. For example, the work of environmental journalism has been documented since the 1960s, when the media began reporting on the obvious impacts of the environmental crisis of the post-war period. An example of this is *Silent Spring*, a book published in 1962 by Rachel Carson to highlight the danger of pesticides on the environment and human health. Another example is the report presented by The Club of Rome (1968), titled *The Limits of Growth* (published in 1972), which stated: “If the present growth trends in world population, industrialization, pollution, food production and resources depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will a rather sudden and uncontrollable decline in both population and industrial capacity... nothing can grow indefinitely in a finite environment” (Meadows *et al.*, 1972, cited Mayor, 2009: 14).

Despite the previous efforts, it can be argued that the communication-environment link is quite recent. Environmental communication is relatively new and its first articles in scientific journals were published in the 1970's. This production increased by 25.5% between 1970 and 2000, while the production of journal articles between 1985 and the early 1990s increased by 44% (Pleasant *et al.*, 2002, cited Roger, 2011). Later, the first decade of the 21st century witnessed the emergence of journals specialised in environmental communication and ecological marketing, as well as websites, blogs, movements in social networks, international events, biennials on communication and environment, etc. This dynamic shaped the body of work on environmental communication and gave it a place in associations, such as the National Communication Association (Roger, 2011).

The theoretical construction of the environmental communication category took place in more recent works. For example, Solano (2001) formulated a reflection on communication in the generation of

environmental awareness, by using education as a reference. Later, Michelsen (2003) proposed that communication on environmental and sustainability issues is associated with change in individual behaviour, and that therefore it is essential to analyse the cultural context, because it associates environmental behaviour to people's lifestyle. Castro (2005) was the first to address that relationship, which he understands as a process of development and exchange of messages between social agents whose purpose is to promote the dissemination of pro-environmental knowledge, attitudes and behaviours.

Castro's approach (2005) involves two basic frameworks of reference. On the one hand, the notion of environmental education as instruction in environmental awareness aiming to modify behaviours and, on the other hand, the conception of sustainability as the use of natural resources in a controlled way that allows their preservation over time. These two frameworks of reference are, if you will, the official frameworks established by international agencies, which advocate for the capitalist dynamic without proposing another production logic. However, it is important to remember that there are other dynamics and that, in fact, their proposals promote another man-nature relationship from an environmental rationality that configures another worldview (Leff, 2006).

Piñeiro (2008), influenced by Castro (2005), identifies the lines followed by environmental communication: a) the journalistic line, which produces and disseminates environmental news and delves into environmental events to make them public; b) advertising communication, which is divided into ecological marketing (promotion of products and services with an environmental added value) and environmental marketing (related to change in attitudes, behaviours and values); c) communication and education, related to interpersonal communication without mediation of objects; d) the interpretative line, which uses media exhibitions to encourage people to reflect; and e) communication with new technologies, which invites people to carry out research.

Piñeiro (2008) focuses on environmental communication, education and marketing, since their purpose is to change values, habits and behaviours. Consequently, he defines environmental communication "as a public or collective strategic communication campaign, programme or plan that uses different media and formats (banners, audiovisual material, posters, brochures, radio ads, etc.), and whose final objective is to make current psychological and/or social factors (values, attitudes, behaviours, opinions, habits, meanings, etc.) more pro-environmental" (p. 242).

As we can see, environmental communication has been directed to the development of practices that enable environmental conservation. In this order of ideas, it is necessary to investigate the academic production related to environmental communication and conservation. Accordingly, the following section present a review of publications that address the link between environmental communication and environmental conservation, and environmental behaviours.

2. Methods

This documentary review of the works related environmental communication and conservation corresponds to a descriptive study that combined quantitative and qualitative methods. A total of 70 documents on the subject of study were reviewed, but only 62 were systematised and analysed. The

final sample corresponds mainly to scientific research articles included in specialised literature databases.

2.1. Methodological strategies

This documentary research (Alfonzo, 1995) was conducted in two phases: an *informative phase*, which consisted in analysing and selecting relevant information for the study (Páramo, 2008) and an *argumentative phase*, which consisted in examining the veracity and desirability of the obtained information. Therefore, during this second phase, we discussed the consequences and alternative solutions and came to critical conclusions after evaluating the collected data (Páramo, 2008).

2.2. Procedure

The *informative* phase involved, firstly, the exploration of restricted and open bibliographic databases specialised in indexing journals responsible for disseminating the scientific results in all areas of knowledge in Latin America and the Caribbean, as well as Spain and Portugal. The consulted databases were: Jstor, Dialnet, Redalyc, SciELO, Latindex, Google Scholar, ProQuest and Ambientalex.info. We also consulted the DOAJ portal, which is an open-access database of multidisciplinary journals with links to full-text articles, and the Thesis and Dissertation Repository (TDR).

Secondly, we established four search criteria/keywords to obtain the material of study in specialised bibliographic databases, portals and repositories. The first search criterion/keyword (C1) was *environmental communication and conservation* which was used in a combined way, i.e. *environmental communication and conservation* and *environmental conservation and communications*. The second keyword (C2) was an individual category: *environmental communication*. The third keyword (C3) was a source related to the topic of study: *environmental education and conservation*. Finally, the fourth search keyword (C4) was related to the variations of the titles of the consulted sources or their keywords: *pro-environmental behaviours*, *pro-environmental attitudes* and *sustainable attitudes*. It should be noted that the search keywords favoured the research production produced in the Spanish language and carried out in Latin American countries, but they were not used as exclusion criteria.

The third activity was to organise, analyse and systematise the data collected from articles, books, consultation papers and doctoral theses. This analysis was quantitative and qualitative and its results are presented below.

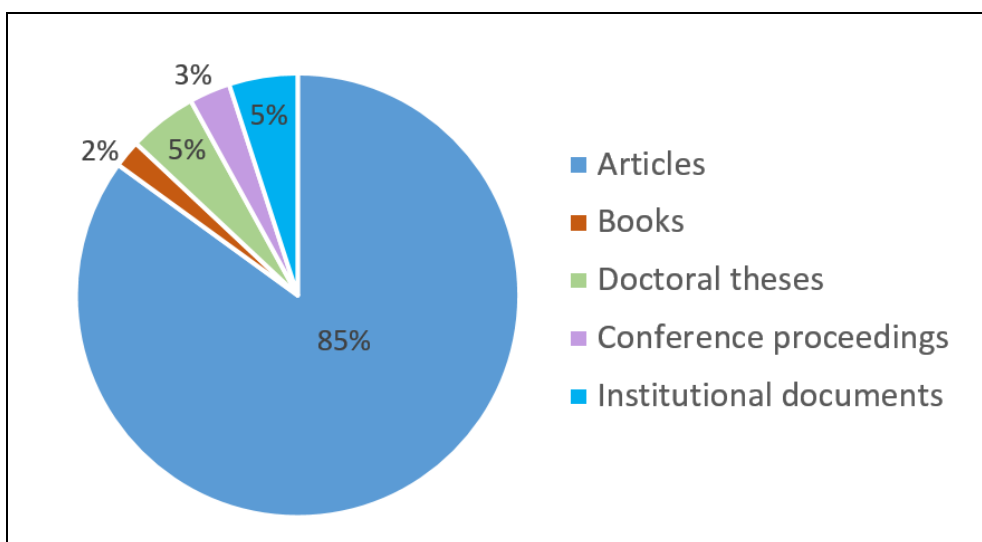
3. Results and analysis

3.1. Informative phase - quantitative analysis

This section presents the results of the quantitative analysis of the collected documents. A total of 62 bibliographical sources indexed in specialised databases were examined. The distribution of the

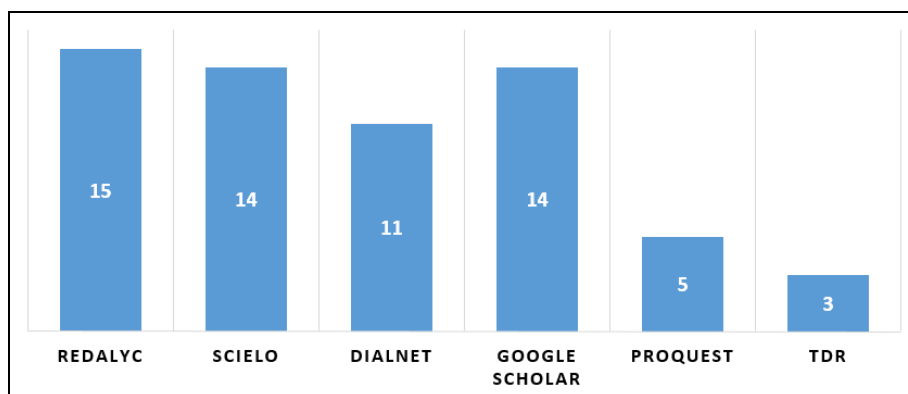
collected documents according to their typology is as follows: 53 (85%) were articles; 3 (5%) were doctoral thesis; 3 (5%) were institutional documents; 2 (3%) were conference proceedings; and 1 (2%) was a research book (See Figure 1).

Figure 1. Distribution of documents according to typology



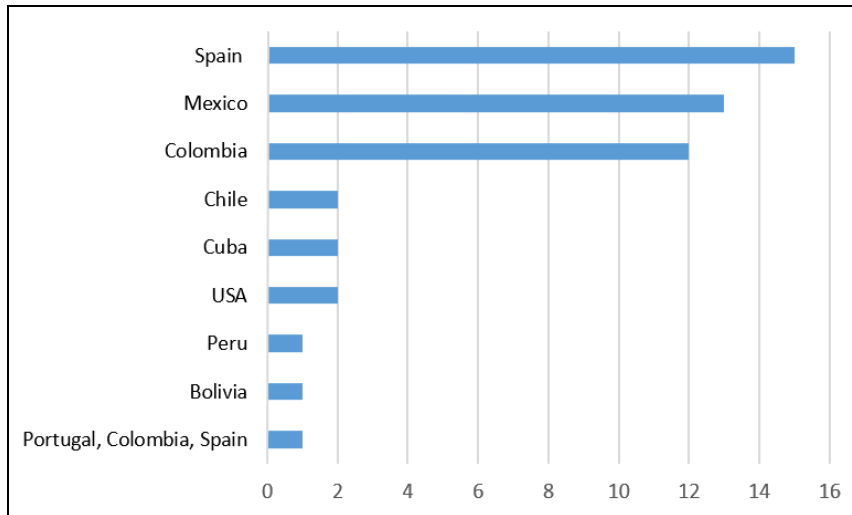
In relation to the databases in which the documents were found, the relation is as follows: 15 documents in Redalyc, 14 in SciELO, 11 in Dialnet, and 5 in ProQuest. The first 45 documents correspond to research articles. In addition, three (3) doctoral theses were found in TDX and 14 sources in Google Scholar, which correspond to: three (3) articles from international journals, four (4) articles published in the Mexican journal *Tópicos*, two (2) proceedings of the 9th and 10th biennial Conferences on Communication and Environment held in the United States of America; and one (1) research book on environmental education in Spain (Barranquero & Marín, 2014) (see Figure 2).

Figure 2. Distribution of documents according to the database of origin



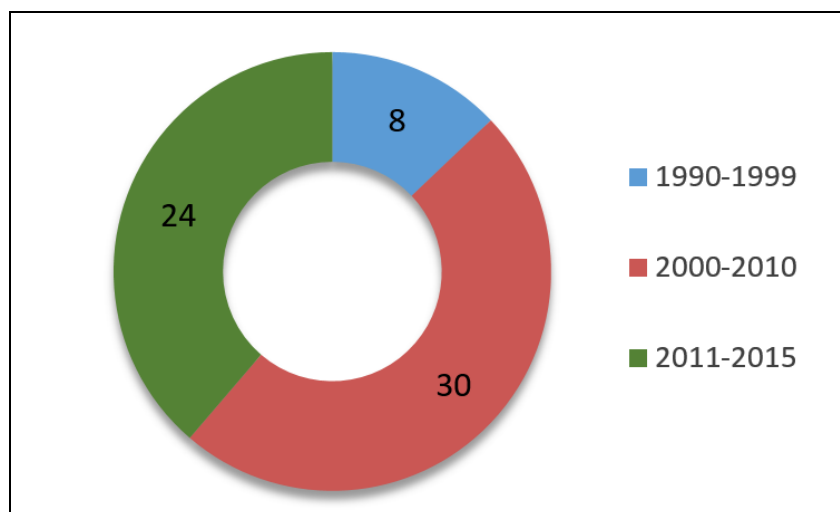
On the other hand, with regards to the country of origin of the documents (place of research place or country of origin of the author) these are the results: the analysis revealed that Spain was the place of origin of most of the texts on the subject. Mexico is in second place and Colombia in third. Figure 3 shows the other countries with smaller numbers of publications on the subject.

Figure 3. Distribution of documents according to country or origin



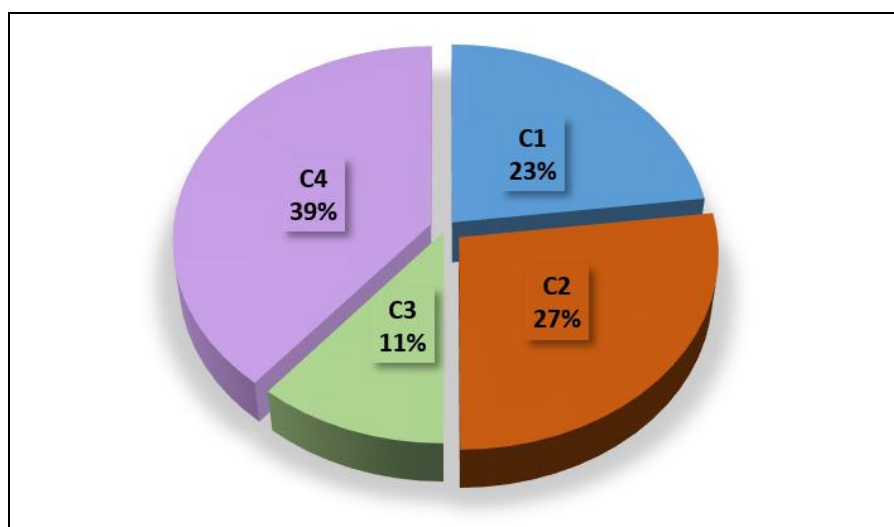
In terms of the year of production of the 62 documents on *environmental communication and conservation*, 8 studies were produced during the 1990s and 30 between 2000 and 2010. 24 works were published from 2010 to 2015, which indicates a significant increase in academic work on the subject (see Figure 4).

Figure 4. Distribution of documents according to year of production/publication



Finally, we present the classification of the documents according to the search criteria/keywords. Figure 5 shows that 39% of the sources are related to the fourth search keyword (C4), i.e., *pro-environmental behaviours, pro-environmental attitudes and sustainable attitudes*. 27% of the documents were found with the *environmental communication* keyword (C2). 23% of the sources refer to the keyword (C1) *environmental communication and conservation*. Finally, 11% of the documents were located with the keyword (C3) *environmental education and conservation*.

Figure 5. Distribution of documents according to search criteria/keywords



Based on this first quantitative analysis of the 62 sources related to the *environmental communication and conservation*, it can be concluded that most of them are scientific research articles identified in specialised bibliographical databases, mainly in: Redalyc, SciELO, Dialnet and ProQuest. The countries with the largest production of these studies are Spain, Mexico, and Colombia, which largely address issues related to: *pro-environmental behaviours, pro-environmental attitudes and sustainable attitudes*; secondly, *environmental communication* and, thirdly, *environmental communication and conservation*.

3.2. Argumentative phase - qualitative analysis

The qualitative results of the analysis of the sources is presented in four sections defined according to the criteria used to search for the sources: *environmental communication*; *environmental education and communication*; *environmental communication and conservation*; and *pro-environmental behaviours, pro-environmental attitudes and sustainable attitudes*. This categorisation allows us to establish similarities and differences, as well as comparisons between the categories of analysis proposed for the subject under study.

3.2.1. Environmental communication

The analysis of the documents according to this category revealed three groups: environmental communication and environmental journalism; environmental communication and environmental information; and environmental communication and education.

First of all, within the field of environmental communication there is marked media action in the transmission of environmental messages. There is, therefore, a strong relationship between the media and the environment. In fact, Parrat (2006) highlights the media's information work and the emergence of environmental journalism, which he defines as “a journalistic specialisation that deals with the information generated by the interaction of humans with living beings and their environment, both natural and the one created by humans themselves”.

However, it was Fernández who, in 1995, provided the first definition of environmental journalism, “to designate this journalistic specialty...that deals with the news related to nature and the environment and in particular with the aspects that have to do with degradation” (cited Parrat, 2006). For Barranquero and Marín (2014) it is important to highlight the work of Fernández (2011a), who compiled a bibliography of works on environmental journalism in Latin America following in the footsteps of English research studies in environmental communication (Hansen, 2011; Pleasant *et al.*, 2002; Schäfer, 2012 [cited Barranquero and Marín, 2014]).

Regarding the work of the media, especially the mass media, Santiago (2008) points out that television, radio and the press report about natural events without explaining the causes of the social and environmental problems and that this possibly promotes an attitude of passivity and indifference and anti-environmental values, like consumerism, dehumanisation and the discrediting of nature among viewers.

In the same sense, Igartua (2002) has explored environmental content in television programmes and established that they cultivate a sort of beliefs about the environment that fluctuate between sensationalism and awareness. In that vein, Piñuel & Lozano (2009) analysed how the environment is a key reference in the social construction of catastrophic events. Therefore, journalists are responsible for the catastrophic view of the environment, as shown by the papers published by Lema Blanco and Meira (2005).

Precisely, Sousa (2008) reflects on the responsibility of journalists to address environmental issues, and proposes a theory of the agenda setting and the responsibility of environmental journalism. In the same way, Fernández (2011 b) analysed the relationship of the educational function of environmental journalism. For his part, Parrat (2005) criticised the work of journalists, and invited them to assume a pedagogical and educational attitude and asked the media to take advantage of their broadcasting power to spread environmental awareness among citizens, enhancing the educational dimension of environmental information through “eco-literacy”. According to him, “eco-literacy” is the “environmental education through the media's dissemination of information on issues related to the environment (...)”, in addition to creating permanent sections or spaces and specific programmes of environmental awareness with the help and participation of experts in environmental education” (p. 57).

In fact, Cuadrado (2002) explores the educational function that is latent in non-explicitly educational activities, like for example watching television, reading newspapers or comic books, playing and listening to music. On this regard, he points out that “informal education that is carried out through the media is perhaps the one that produces more effects in people and the least known” (p. 26). This field has not been properly explored yet. In contrast, Perales & García (1999) addressed the role of the media in the school and considered that “what school is often unable to offer, is more than compensated by the media through their multiple channels (press, radio, television, etc.)” (p. 149). According to the authors, these media have the potential for meaningful and autonomous learning by students at school, given that “the integration of the mass media in the field of school work represents one of the most promising lines of action in the different areas of knowledge contemplated in educational programmes” (Perales & García, 1999, p. 150).

However, Ruíz, Martín & Cabrera (2011) affirm that television includes few environmental contents and depicts them in a biased manner. With the same purpose, Ostman and Parker (1987, pp. 3-9) have argued that there is low evidence on the use of television to learn about the environment (cited Ruiz, Martín & Cabrera, 2011). However, they found out that heavy TV watchers exhibited positive behaviours towards the environment, but were less critical towards contents dealing with these topics and did not like discussing this topic with others. On the other hand, newspaper readers were more interested in the topic, were involved in positive activities towards their natural environment, and expressed greater knowledge, awareness and positive behaviour in favour of the environment than TV viewers. In other words, the print media seemed to stimulate more pro-environmental attitudes than the electronic media, possibly because newspapers offer greater contextualisation and documentation of environmental events, while television, due to its characteristics, does not provide enough details in the environmental news it offers.

Secondly, works on environmental communication question the merely informative work of the media in relation to environmental issues. In this regard, Carabaza (2007), in accordance with other studies [Einsiedel and Coughlan (1993); Fregoso (1993); Hester and Gonzenbach (1995); Yescas Laguna (1999, 2000); Martínez (2003) and Carabaza (2004)] coincides in affirming that the environmental issue is not a permanent topic in the media and that when it is addressed it is simplistically and superficially depicted. “The media are not developing an educational and critical attitude to report on environmental issues by keeping out of the problematic and only present the economic-political events, related to natural disasters and fauna in a descriptive manner” (Carabaza, 2007, p. 2).

In short, it is argued that the work of the media has been merely informative (in particular the audiovisual media), since they do not delve into the causes and much less into the solutions to environmental issues. In that line, Santiago (2008) criticises the limited educational work of the media since they do not explain the causes of the socio-environmental problems, which is a situation that promotes an attitude of passivity and indifference and anti-environmental values in viewers. Finally, the author asks the media to go from informing to action-reflection-action, to improve the teaching and learning processes.

Carabaza (2007) delves into the communication-environment relationship, understanding the complexity of environmental communication and especially the complexity of the object to be communicated, i.e., the environment. For this reason, he proposes four areas of action:

communication and society, political sphere, educational sphere, and social organisations. In the same vein, Solano (2011) recognises the complexity of environmental issues, as they in turn involve social, economic and technological issues.

However, in order to address the communication-environment relationship it is necessary to depart from the conceptions of environmental communication that have been offered. As a result, it is necessary to first understand the concept of communication. In this regard, Serrano (cited Carabaza, 2007) defines communication:

As a form of interaction, involving the participation of at least two actors who based on guidelines associate a repertoire of expressions with an object reference through forms of behaviour coordinated by representations. In addition, communication is a dialectical process that presents each and every one of the characteristics of the finalised systems, in which the components of the system referred to in the model are: actors, instruments, expressions and representations that are related to the objects of reference, the interventions and the mediations originated in the social system (Serrano 1993, pp. 13-22 and 161-172).

Moreover, according to Wiemann and Giles (cited Castro, 2009, p. 2) communication also refers to the “production, transmission, reception and exchange of messages between two or more participants, characterised by the use of intentional and conscious of a symbolic system that is mutually intelligible”.

Additionally, Castro (2009) uses other two relevant concepts in environmental communication: *environmental information and persuasive communication*. The author clarifies that “information seeks mainly to present contents and get people to remember the presented data and issues, promoting the acquisition of knowledge about a subject, while persuasive communication involves presenting a position and providing one or more arguments to support it” (p.2). In the same sense, the White Paper on Environmental Education in Spain (OEI, 1999) emphasises that communication “aims, in addition, to produce a certain attitude, to provoke a reaction or to encourage a certain behaviour in receivers, by offering arguments and values that support a given position. Thus, information systems are unidirectional, while the communicative systems are bi-directional” (OEI, 1999, pp. 30-31).

In addition, Castro (2009) emphasises that environmental information must be supported by scientific evidence, which should be understandable. In addition, the author points out that “it is not enough to start an open-ended process of information with the public, but that it is essential to enable feedback... from society towards the sender of information, by collecting suggestions, complaints... and enabling the influence towards the sender, in an open social dialogue” (p. 4).

On the other hand, persuasive communication “aims to achieve a favourable attitude and simultaneously motivate the behavioural intention, by offering arguments to support a certain pro-environmental position, through the impact of socially mediated experience, the indirect experience” (Castro, 2009; p. 4). According to De Young (cited Castro, 2009), persuasive communication should be assumed in a conscious and explicit way as a central element in programmes aiming to change environmental attitudes and behaviours. The effectiveness of this technique will be determined by its capacity to make people understand the nature of the environmental problem, the behaviour that is necessary to solve this problem and the steps required to develop the behaviour.

Based on the previous context, Castro (1999) defines environmental communication as the process of development and the exchange of messages between different actors in order to promote the dissemination of pro-environmental and sustainable knowledge, attitudes and behaviours.

Below are some other important definitions of Environmental Communication, cited Roger (2011) in his doctoral thesis:

“Environmental communication must have as its main objective to contribute with evidence and rational arguments for the planning, implementation, follow-up and support of the processes of recovery, improvement and rational management of the factors that characterise the environment, human development and quality of life, with the active commitment and participation of all the members of the community” (Tréllez, 1995, p. 133).

Environmental communication is the strategic planning and use of communication processes and use of media to support decision-making, public participation and the implementation of projects to achieve sustainable development (Oepen, 2000)

Environmental communication should be a process of social interaction that helps people to understand the key environmental factors and their interdependence, but that at the same time, enable citizens’ feedback and constructive response. To do this, it has a range of resources that is continuously extended with new technological applications (Rekondo, 2002).

Similarly, Piñeiro (2008) considers Environmental Communication as a form of public or collective strategic communication campaign, programme or plan that uses different media and formats (audiovisual ads, banners, posters, brochures, radio ads, as well as interpersonal communication), with the aim of changing current psychological and/or social factors (values, attitudes, behaviours, opinions, habits, meanings, etc.) more pro-environmental”

Based on the contributions described by Castro (1995, 1999, 2005, 2009) and the aforementioned definitions of environmental communication, it can be concluded that environmental communication requires planning and participation of the various actors, as well as the feedback of the receptors so that they cannot only acquire knowledge, given that information is not sufficient to raise awareness or to make people act. Therefore, persuasive communication is required to convince, transform and act.

On the other hand, the White Paper on Environmental Education in Spain (OEI, 1999) points out that the instruments of environmental education are: information and communication, education and training, participation, research and evaluation. Therefore, it is considered that communication is one of the tools of environmental education. It is thus necessary to note the close relationship between environmental education and communication. From this perspective, environmental communication is a strategy within a process of environmental education, as it will be discussed in the next section.

3.2.2. Environmental communication and education

Among the multiple events that highlighted the global environmental crisis since the 1960s and 1970s, it is important to highlight the United Nations Conference on the Human Environment, held

in Stockholm in 1972, which “paved the way for greater understanding of the systemic and interdisciplinary character of environmental problems” (UNESCO *et al.*, 1985, p. 15), thus setting up the principles of Environmental Education.

In this context, UNESCO established an International Programme on Environmental Education, which for the first time addressed the link between environmental education and the media:

It is essential to carry out an education work on environmental issues that targets young generations as well as adults, and pays due attention to the less privileged sector of the population, to widen the bases of a well-informed public opinion and the sense of responsibility of individuals, companies and communities for the protection and improvement of the environment in all of the human dimensions. It is also essential for the mass media to avoid contributing to the deterioration of the human environment and, instead, to disseminate educational information about the need to protect and improve it, so that humans can develop in all aspects (UNESCO, 1975).

In this context, for González (1994) the media are highly motivating due to their proximity to the world of children and young people. Therefore, the media would be an opportunity in environmental training for educators, as well as in non-formal and community environmental education.

In the same sense, Santiago (2008) highlights the didactic importance of the media in improving the teaching and learning processes that strengthen critical and reflective behaviours towards the formation of critical, historical and social awareness, given their informative, up-to-date and influencing power. The intention is that teachers promote educational activities for citizens to understand the urgency of optimal environmental conditions, by taking advantage of the data provided by the media in pedagogic terms. Likewise, González (1994) stresses the relevance the media may have in the teaching-learning process, since they allow the use of group techniques and the development of research processes in the resolution of problems.

Currently, environmental education processes are closely related to the use of information and communication technologies (ICT). For example, Paredes (2006) proposes lines of qualitative research on ICT and their contributions to environmental education. Paredes proposes a shared space for the study of ICT and environmental education. Similarly, the work of Ojeda, Gutierrez & Perales (2009) examines the tools provided by ICT to environmental education.

With the same purpose, Badillo’s (2011, 2012) research study highlights the need to delve into the methods and strategies of communication, education and pedagogy used, by following the indications of UNESCO in this regard. This is possibly due to the fact that, faced with the absence of criteria and contextualisation in the different regions of Colombia, it is teachers who have designed and developed the methods. Likewise, the author highlights the importance of engaging young people through the use of digital spaces (such as Facebook), which allow the discussion of environmental issues and the promotion of the use of clean technologies, “since this type of ICT-based strategies are efficient and generate a great learning dynamic in students, as they open new possibilities for environmental education on the basis of autonomous learning” (Badillo, 2012, p.128).

Of the 62 analysed sources, the studies concerning environmental conservation are related either to environmental education or environmental communication, and very few manage to articulate the

two fields of knowledge which are complementary in their actions. In this respect, we identified a group of studies related to the role of communication and environmental education in the conservation of biodiversity (Andelman, 2003; Gálvez, 2002; Castillo, 2003; Linares, Tovilla & De la Presa, 2004) as well as the protection of the natural parks (Durán, 2009; Cueto, 2007) and the pressure generated by urbanisation on these protected areas (Delgado, 2008). This aspect is discussed in the next section.

3.2.3. Environmental communication and conservation

Pellegrini, Álvarez, Moncada, Navas, Rávago & Rivero (2000) produced a report on the role of environmental education and communication in the conservation of biodiversity and the protection of protected areas in Venezuela. They highlighted the need to promote an environmental education strategy in the management of these areas. Likewise, the authors pointed out that although they have increased education and communication programmes aimed at the conservation of biodiversity, the efforts are not enough, since the indicators related to conservation and environmental behaviours do not show improvements, while the “failure, or rather absence, of evaluation of the projects undertaken question the possible effectiveness of the results obtained” (Pellegrini *et al.*, 2000).

In the same study, the authors identify two tendencies in the environmental education programmes and activities implemented in Venezuela’s protected areas, one properly directed to the conservation of the area and the other aiming at the conservation of species and awareness of the value of biodiversity. By way of conclusion, Pellegrini *et al.* (2000) highlight the increase in the implementation of educational and communicative experiences in protected areas, as well as in the number of institutions in charge. In addition, the authors highlight the shortage of financial resources, the need for specialised technical resource, short-term and discontinuous actions, the lack of educational plans in correlation with the objectives proposed for conservation, and the absence of evaluation of these mechanisms, few mechanisms for inter-institutional cooperation, minimal inclusion of the social component in such programmes, low community involvement and limited interdisciplinary work, among others. In this regard, Álvarez (2001) highlights the lack of planning and implementation of environmental education programmes for the conservation of biodiversity in accordance with the results of the diagnoses of the work carried out by institutions in Venezuela’s protected areas.

The work of Revilla (2005) had the same objective. He identified some of the criteria of environmental education in relation to ecotourism applied to visitors and different strategies for the residents of the protected region. In the same vein, Carabias, Maza & Cadena (2003) published a book about the capabilities needed for the management of protected areas in Latin America and the Caribbean, where communication is precisely one of the aspects to be considered. For example, Mulero (2002), analyses the protection of natural areas in Spain, emphasising the territorial contrasts and the conflicts this task generates. The same author researched the international initiatives for the protection of natural spaces (Mulero, 2004). In the same line is the work of Gómez (2011) on the conservation of Colombia’s Orinoquía region, which proposes that social communication and local participation should be considered in order for the conservation of ecosystems to be consistent and legitimate and benefits both residents and nature.

At the same time, Andelman's (2003) work considers the role of communication and environmental education as tools of social intervention, in exercises of participatory planning of strategies, plans and programmes for the conservation of biodiversity, aiming to change policies, through cooperation, dialogue and negotiation. In the same line is the study of Etxano (2012) on the evaluation of policies implemented in natural protected areas in the Basque Country in Spain.

There are works that deal with communication in the protection of natural parks in Colombia. For example, Girón (2011) makes a proposal of environmental journalism for the Tayrona National Natural Park. With other communication dynamics, García & Montes (2012) propose a communication strategy for the positioning of natural parks in the Pacific region of Colombia, with emphasis on the management of the media through public relations. In the previous line, Restrepo & Quintero (2012) make a proposal for the strengthening and implementation of communication strategies in national natural parks and Cali Zoological Foundation. For his part, Pulido (2007) proposes a tourism policy for natural parks but notes that there are no appropriate communication mechanisms among the parks' managers and visitors.

On the other hand, Herrera *et al.* (2011) established a relationship between communication, development and environment. In that vein, the authors conducted an investigation that sought to identify and characterise the experience of communication and development that contribute to the transformation of environmental issues in the Andean region.

Meanwhile, Cueto (2007) highlighted the important alliance between communication and environmental education to build strategies that link communities, their realities and their specific needs. In short, Cueto makes an invitation to rethink communication, to make it participatory, to make communication an essential tool in the conservation, protection or restoration of nature and the construction of a more harmonious relationship with all that surrounds us, including ourselves. In the same year, Fava (2007) carried out work on education and communication in protected wetlands.

As you can see so far, environmental education and environmental communication have taken up the challenge of promoting changes in habits, improving behaviours and developing awareness about the object of study: the environment and its conservation. To this end, it is necessary to begin to understand environment as the relationships that exist between the social structure and the supporting ecosystem basis (Ángel Maya, 1995). In other words, we should reflect on the interaction between ecosystems and socio-systems, since the conflicts that arise in this interplay are not environmental but social. According to Cárdenas (2002), "our interpretation, perception and action on ecosystems is the product of a code that defines our understanding of space, territory and time" (cited Cueto, 2007, p. 33). This indicates that our relationship with nature is a social construct that is mediated by culture (Ángel Maya, 1995; Leff, 2007), which changes in each place.

In environmental communication and education, information and training is not enough. Solano (2011) argues that we have not overcome the first level of awareness (the three levels are knowledge, attitudes, and action), since the simple acquisition of knowledge does not warrant action, i.e., a positive attitude towards the environment, a change in attitudes or a better conduct. For example, studies like the one carried out by Barazarte, Neaman, Vallejo & García (2014), with the participation of young students from Valparaiso (Chile), show that environmental awareness does not coincide with environmental behaviour. In that vein, it is important for this research to address a

final group of documents related to environmental psychology, which deals with humans' behaviour and their natural environment. The following section addresses this group of documents.

3.2.4. Pro-environmental behaviours, pro-pro-environmental attitudes and sustainable attitudes

Several authors have already addressed the relationship between these concepts:

Environmental behaviour (Bratt, 1999; Zelezny, 1999), pro-environmental conduct (Leeming, Dwyer, Porter and Cobern, 1993; Corral-Verdugo, 2001), ecological behaviour (Kaiser and Shimoda, 1999), responsible environmental behaviour (Cottrell and Graefe, 1997) and sustainable behaviour (Schmuck and Schultz, 2002), as actions that result in the protection of the environment. However, nobody has made clear whether these concepts are synonymous, whether they refer exactly to the same type of action, or whether there are differences between them [Corral-Verdugo & Queiroz, 2004, p. 2]

From the perspective of environmental psychology, Álvarez & Vega (2009) establish relationships between pro-environmental attitudes and behaviour sustainable:

... most of the research on attitudes focus on their predictive value on behaviour. However, although many works have been carried out to identify the factors that determine attitudes towards the environment (Amérigo, González & Aragonés, 1995; Cottrell, 2003; Guérin, Crête & Mercier, 2001), in order to predict the adoption of pro-environmental behaviours (Corraliza & Martín, 2000; Kaiser, Hübner & Bogner, 2005; Kortenkamp & Moore, 2001), there are difficulties arising from the lack of consensus on the concept of environmental attitude (p. 247).

Likewise, Álvarez & Vega (2009) cite several concepts of *environmental attitude*. For instance, Holahan (1991, p.15) defined it as “the favourable or unfavourable feelings towards certain characteristic of the environment or a problem related to it”. For their part, Taylord & Todd (1995) understand *environmental attitude* as a direct determinant of the predisposition towards pro-environmental actions.

With regards to *pro-environmental conduct*, it is defined as the direct and/or indirect human action on the environment, which aims to reduce, prevent, and ideally reverse, the deterioration of the resources of the natural environment that sustain life on earth (Bustos, 2004, p.55).

In this sense, according to Álvarez & Vega (2009, p.247), “some of the models designed to try to explain, describe and predict the adoption of responsible behaviours towards the environment have been proposed by Corral Verdugo (1996), Eagly & Chaiken (1993), Grob (1995), Himes, Hungerford & Tomera (1986-87); Hopper & Nielsen (1991), Schultz & Zelezny (1999) and Schwartz (1992)”.

However, although there are some discrepancies between these terms, they agree that attitudes and the intention to act have an important influence on behaviour when other factors do not try to prevent them, especially in relation to individual behaviours of consumption and environmental participation

(Taylor & Tood, 1995). Another factor considered as a descriptive parameter of the level of environmental awareness, and a predictive variable of environmental behaviour, is environmental concern, as proposed by the study carried out by Berenguer & Corraliza, (2000).

According to Álvarez & Vega (2009), there is a low correlation between pro-environmental attitudes and ecologically responsible behaviours, which has led them to consider that high awareness of the environment, by itself, does not ensure the adoption of responsible ecological behaviours (Geller, Winett & Everett, 1982; González, 2003; Oskamp, Harrington, Edwards, Sherwood, Okuda & Swanson, 1991) and that their predictive power is lost when we no longer refer to the intent but to action (Cheung, Chan & Wong, 1999; Hernández, 2004). All this has emphasised the need to carry out further research to improve the models that purport to explain pro-environmental behaviours (García-Mira & Real, 2001; Kaiser *et al.*, 2005).

Miranda (2013) relates environmental values, beliefs, attitudes and behaviours. In terms of *environmental values*, Miranda (2013) cites Pato and Tamayo, who claim that “every human being, throughout their life, builds its own repertoire of individual values, which will determine its action on the environment. They [the values] not only affect behaviour, but also other variables, exhibiting a hierarchical model of relationship on environmental issues: values-attitudes-behaviour” (2006, p.3).

Indeed, studies like those carried out by Serrentino, Bermúdez, & Castillo (2013) have confirmed that individuals combine their values, norms and beliefs to build attitudes towards the environment.

With regards to *environmental beliefs*, Miranda (2013) defines them as variables that precede and predict pro-environmental attitudes and behaviours, from two components. The first is a cognitive component, which is determined, according to Pato, Ros & Tamayo by: “the beliefs that serve as a structure or map that guides the cognitive and motivational processes, contributing to the understanding of how values, attitudes and behaviours relate and of the conditions in which they remain constant or transform” (2005, p. 8)

The other component refers to understanding beliefs as the attitudes themselves, since, according to Miranda (2013, p. 98), attitudes “are a set of evaluative conducts about the object, which the individual puts into practice in the environment”.

According to Miranda (2013), pro-environmental attitudes must be conceived as a phenomenon inherent to the place where they are studied, since they are related to patterns of life in the communities, i.e., these processes are related to culture. This approach is consistent with the model designed by Stern, Dietz & Guagnano, who argue that in order to understand environmental behaviour, it is necessary to begin to understand the social values and positions, as well as people’s beliefs about the environment. In other words, people builds representations of the world through their beliefs, values and attitudes, and these representations are the elements that organise and give meaning to their behaviour (Elia *et al.*, 2009, p. 204, cited Miranda, 2013).

In this sense, the orientation of people’s values has a direct influence on their beliefs, and thus, on their attitudes and behaviour. Thus, beliefs are closer to attitudes than to values, so they will provide positive attitudes that facilitate the adoption of conduct (Aguilar, 2006, p. 99, cited Miranda 2013, p. 100).

Values → Beliefs → Attitudes → Conduct

Causal order established between the variables that explain behaviour according to Stern & Dietz (1994), cited Miranda (2013, p. 100).

On the other hand, Miranda (2013) and Álvarez & Vega (2009) agree that the previous will only be possible through environmental education. In this regard, Álvarez & Vega (2009) argue that environmental education should continue moving towards sustainable development, but must focus on people, the community and not on the environment, and thus should help individuals to interpret, understand and know the complexity and global nature of the problems that occur in the world and teach attitudes, knowledge, values and behaviours that promote a sustainable lifestyle, in a way that ensures economic, social, political and cultural changes that will enable us to achieve a development model that involves not only an environmental improvement, but also a social, economic and political improvement at global level. In the case of Miranda (2013), she points out that “the focus of environmental education must be based on the characteristics of the community and it is important to carry out studies to determine these variables or dimensions, if we want to progress in the consolidation of a pro-environmental culture and, thus, progress in the search for sustainability” (p.102).

However, Corral-Verdugo *et al.* (2009) consider that the challenge for environmental psychology in the 21st century is to incorporate to the study of pro-environmental behaviours, the protection of the social environment, since it is necessary to explain and predict such behaviour, given that the two types of actions are not conceived separately (Bonnes and Bonaiuto, 2002, cited Corral-Verdugo *et al.*, 2009). The convergence of the natural and social dimensions produces what is known as “sustainable behaviour” (Schmuck and Schultz, 2002), i.e., the set of deliberate and effective actions aimed at the protection of natural and cultural resources (Corral & Pinheiro, 2004, cited Corral-Verdugo *et al.*, 2009).

In fact, it was in the early 1990s, when there was talk of sustainable development, when the terms of *pro-environmental*, *pro-ecologic* or simply *environmental* conduct began to be replaced by the concept of *sustainable conduct*. The latter term implicitly aims to protect not only the environment, but also to promote human well-being in all corners of the planet (Corral-Verdugo *et al.*, 2009, who based their claims on the works of Schmuck and Schultz, 2002; Bonnes and Bonaiuto, 2002; Pinheiro, 2002).

On the other hand, with regards to the practical application of environmental psychology studies, we identified environmental psychology studies related to pro-environmental behaviours, specifically oriented to water saving (Martimportugués, Canto, García & Hidalgo, 2002; Bustos, Flórez & Andrade, 2004), the separation or recycling of solid waste (Terán, Bermúdez & Castillo, 2013). In addition, the study carried out by Guevara & Rodríguez (2002) stands out because it aims to change the behaviour and attitudes of the population (State of Tlaxcala, Mexico) in relation to the management of their household waste, through the use of strategies of social influence and persuasion.

On that line, the doctoral thesis of Roger (2011) discusses the role of environmental communication in the recycling of aluminium packaging by adolescents. This work is related to the thesis of Piñeiro (2011), which analyses the environmental communication strategies of Madrid's City Council around waste and cleaning. Another type of study identified in the review is the one carried out by Barreto & Neme (2014) to measure the pro-environmental conduct intention related to the reduction of waste, excessive or unnecessary use of water, gas and electricity at home, being the studies related to environmental conservation more scarce.

4. Conclusions

In relation to the first quantitative analysis, it can be argued that *environmental communication and conservation* is an emerging field of research, since the review confirms that it originated in the late 1990s, while the largest production on this topic took place in the first five years of this decade. Publications on this issue are mostly produced in Spain, followed by Mexico and Colombia.

In fact, these results reflect the need to encourage reflection and research elsewhere, notably in Latin America, since it is necessary to encourage the development of studies and reflect on the belief systems that shape the notion of environment. The construction of proposals from other regions would potentiate the approaches to environmental education and communication, and would enable proposals that enrich the debate and contribute epistemological elements and worldviews to the configuration of this field of study. This would somehow break naturalised western assumptions that predispose the humans' relationship with nature (and benefit the capitalist logic).

On the other hand, the qualitative analysis shows the advances and challenges of environmental communication, since it recognises the strong relationship between the media and the environment, from marked media action and information work in which environmental journalism stands out. In this context, it is important to criticise the passive approach of the information provided by the media on environmental issues, since it is necessary to explain the causes of the environmental issues and to adopt critical and reflective positions that provide solutions. Similarly, it is necessary to point out the catastrophic depiction of these issues by the media, because sometimes the news coverage of the environment uses tragic discourses that depict nature as the antagonistic of humans, which reflects an anthropocentric vision that disregards the complex dynamic of the planetary system.

On the other hand, there are other approaches to environmental communication that take into account the importance of the communication strategy within the process of environmental education. Environmental communication has assumed the challenge of providing educational work on environmental issues, by using its power of persuasion, as well as its educational potential in meaningful and autonomous learning (especially in informal education processes). However, communication and education assume the challenge of informing and educating on the environment, since studies have shown that the mere acquisition of knowledge does not guarantee a better environmental behaviour.

Therefore, to achieve a change of attitude and behaviour it is necessary to understand the complex relationship between humans and nature which involves a series of values, beliefs and attitudes that need to be analysed and studied in specific contexts, to shape pro-environmental behaviours that are

linked to culture and the territory, which is result of a process of environmental education and communication.

As the study has shown, environmental communication has been configured with the general purpose of encouraging behaviours in favour of the environment (such as conservation and responsible consumption), however, the concepts related to that purpose require further conceptualisation, since the analysis has shown that there is an excess of terms (pro-environmental behaviours, pro-environmental attitudes, and sustainable attitudes, etc.), which are often used interchangeably. This discussion allows for an interdisciplinary meeting between environmental communication, environmental education and environmental psychology.

Finally, it is interesting to analyse a different role of environmental communication related to citizen participation, the participatory construction of planning instruments, as well as the evaluation of policies, all of which is necessary to strengthen the bonds between the community with the protection and conservation of the protected areas. Based on the study, it is advisable to expand the number of research works on the role of communication in the protection and conservation of the environment, especially of protected areas, such as national parks.

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