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Science Communication Postgraduate Studies in Latin America: a map and some food for thought

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Abstract

This paper contains an overview of the programmes currently existing in Latin America to train science communicators. For such purpose, only postgraduate courses held regularly were considered in the study. Twenty-two programmes meeting such requirement were identified in five countries, 65% of which were in fact established over the past ten years. They present a lot of diversity in terms of admittance requirements, goals, contents, approaches, duration and graduation requirements. However, all of them share the same effort, aiming to offer specific contents in the area of science communication.

Keywords

Science communication in the developing world

Introduction

With the purpose of addressing the issue of the professionalization communication,[1] which becomes every day more important in Latin America, the symposium "*Comunicación científica como profesión: formación, responsabilidades y roles*" ("Science communication as a profession: training, responsibilities, and roles") is going to be held in Costa Rica, from 28 to 30 September 2016, organised by the international network PCST (Public Communication of Science and Technology), which will definitely be an excellent opportunity to share experiences and reflections in support of the advancement of this professional field.

While there is not yet an inventory of all practical and research activities in science communication in Latin America, we can mention several papers presenting the state of the art in different countries [Dellamea, 2000; Dellamea, Ratto and Scisciani, 2000; Murriello, 2010; Patiño, 2014; Sánchez-Mora et al., 2015; Massarani, 2015; Reynoso, 2015a; Reynoso, 2015b]. Another indicator of how this professional activity has increased in Latin America is provided by the conferences organized by the *Red de Popularización de la Ciencia y la Tecnología en América latina y el Caribe*

[1] In Latin America, there are various terms used for the practical and academic field of science communication, including: science dissemination, popularisation of science and social appropriation of science. Although their definitions sometimes overlap, they are also slightly different. In the region, there is no consensus on such definitions. Although we believe it is very important to respect any differences, for pragmatic reasons in this paper we chose to refer to this area as "science communication," even considering that in the English version the term will be translated as "science communication." However, when a source specifically uses other terms, we will cite them accordingly.

(RedPOP) (Latin American and Caribbean Network for the Popularisation of Science and Technology), which are held every two years. In addition, the number of science centres and museums has seen a considerable increase since the first interactive museums built in the 1970s [Massarani et al., 2015b], with an actual proliferation in the early 1990s to over 470 museum spaces across different countries of the region, as reported in the first guide to science centres and museums in Latin America published by the RedPOP in 2015 [Massarani et al., 2015a].

Research in science communication is an emerging activity in the region. A parameter to analyse the increase in this activity is the number of PhD theses in the field [van der Sanden, 2016]. In Brazil, the first PhD thesis in science communication dates back to 1985 [Bueno, 1985]. About three decades later, the number of theses in the field has reached 201 [Massarani and Moreira, 2009].[2] An analysis of the trends in science communication research showed a concentration on issues related to science centres and museums [Sánchez-Mora, 2015], as well as on science journalism [Crúz et al., 2015].

Undoubtedly, a vital element to the development of such activity is the training of professionals in the field. In order to learn about the range of programmes to train science communicators held in Latin America, the RedPOP embarked on the task of tracking the programmes having such purpose that currently exist in Latin America.

Methodology

This study[3] was conducted within the scope of the RedPOP network, which is promoting a series of initiatives to identify and analyse science communication practical activities and research projects in the region. The purpose was to identify and analyse the postgraduate courses available in Latin America. The study only took into account programmes such as diplomas, specialisations (these are courses *sensu lato*), masters and doctorates (these are courses *sensu stricto*) lasting more than 120 hours and held regularly. Therefore, the research did not include several of the short courses hosted by many organisations not on a regular basis, which are in any case highly important to the training of professionals in the region.

In order to identify the courses to be included in the corpus of our research, we started from those already known to us. We requested the support of the people connected to such programmes, and thereafter we launched a campaign to publicise our project through newsletters. We invited the people in charge of the programmes identified to fill out an online survey with 36 questions. Annexed is a shortened version of such questionnaire.

[2] The Brazilian website of the *Museu da Vida* (www.museudavida.fiocruz.br/brasiliana) contains a list of the dissertations and theses in science communication in Brazil, many of which are available free of charge in a pdf format.

[3] This study was conducted with the support from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and the coordination by the RedPOP with the participation of the Museu da Vida, the Universidad Nacional de Río Negro and UNESCO. We gratefully acknowledge Ernesto Fernandez, for his support to the implementation of the project, and Ana Claudia Nepote, Ana Paula Trindade, Claudia Aguirre, Constanza Pedersoli and Martha Cambre for their support in the collection of data.

To our knowledge, so far there has been neither a study similar to the one presented here, nor a full listing of the courses in the various countries, and therefore it is not possible to say that our study does encompass all the programmes currently existing in the region. On the other hand, this study does not claim to be exhaustive. It rather aims to provide for the first time a critical description and a reflection on the range of courses available across the region. The information obtained should be the first step towards a comparative analysis and benchmarking operation to assess the vulnerability and stability of these programmes as proposed by Trench [2012], as well as towards an exchange of best practices in the region.

The data were analysed with the support of the software Dedoose. The categories under analysis were identified through an inductive and deductive process. On the one hand, we defined a few elements that emerged from the survey questions themselves. On the other hand, through an inductive process, recurring items were found in the responses, which allowed for the definition of categories to be taken into account.

Results

3.1 General characteristics

All in all, twenty-two programmes providing training to science communicators and matching our criteria were identified (see Table 1 enclosed herein). Similarly to other countries outside the region [Trench, 2012] in Latin America there is a wide range of proposals and approaches [Reynoso, Monterrosa and Macías, 2015]. As pointed out by Jon Turney [1994] and Felicity Mellor [2013], the approaches depend largely on the institutions hosting such programmes, leading to different proposals based on their own interests, lines of work, needs of the institution, and the experience of their teachers.

Turney [1994] distinguished two types of courses: those solely based on skills development and those combining theory with practice. This distinction is also applicable to the first courses held in Latin America. However, all such programmes have evolved to adapt to new professional needs in the field [Reynoso, Monterrosa and Macías, 2015]. An example of how they have been adapting as a result of experience, evaluation and advancements in the field of science communication is the *Diplomado en Divulgación de la Ciencia* [Diploma in Science Popularisation] at the Universidad Nacional Autónoma de México (UNAM), which has been held annually since 1995 [Reynoso, 2009].

The programmes involved in this study have different characteristics in terms of content, structure, approaches, objectives, duration, student profiles, entry and exit requirements, as well as degrees awarded. Some of the formulas [Reynoso, 2008] that may be mentioned prioritise different elements such as scientific content, specific types of media, theory, practice, acquiring certain skills or administration and/or management capabilities.

Five of the twenty-two programmes included in this study are not solely devoted to science communication, but it still covers an important part of their curriculum. For example, in Brazil, the Master and Doctorate in Biological Chemistry from the *Universidad Federal de Río de Janeiro* (UFRJ) has included — since 1994 — an area called "Education, Dissemination and Management in Biosciences", with several

dissertations and theses dealing with science dissemination and receiving support from scholarships. Another example, also in Rio de Janeiro, is the Master and Doctorate in Teaching of Bioscience and Health from the *Instituto de Oswaldo Cruz* at the *Fundação Oswaldo Cruz*, which offers a specialisation in science communication.

In Mexico, the postgraduate course in Philosophy of Science (Master and Doctorate) at the UNAM is shared by four university departments (the Directorate General of Science Communication (DGDC), the Faculty of Sciences, the Faculty of Philosophy and the Institute for Philosophical Research). This postgraduate course covers six areas, one of which is science communication. This postgraduate course prepares students for research in this field of knowledge.

In Argentina, the Master in Science, Technology and Innovation has a course in Popularisation of Science, Technology and Innovation, which is the only option of that level in the country.

The programmes analysed in this study are located in five countries, Argentina (4), Brazil (9), Chile (1), Colombia (2) and Mexico (7), whereas the seats of the courses are located in thirteen cities. In Mexico, the *Sociedad Mexicana para la Divulgación de la Ciencia y la Técnica* [Mexican Society for the Popularisation of Science and Technology] (SOMEDICyT) as well as the DGDC of the UNAM have offered several diploma courses, often jointly, to different institutions in the country designed on the basis of the specific needs of their contexts (see Figure 1).

Figure 1. Map showing the distribution of the courses (an interactive map is also available at bit.ly/oferta-divulgacion).

In Brazil, six courses are concentrated in the state of Rio de Janeiro, whilst other two are found in Campinas and one in Salvador. Three of the six Mexican programmes are found in Mexico City, and two in other cities (Cuernavaca, state of Morelos, and Tlaquepaque, Jalisco). There are also various other diplomas offered in different regions of the country, as already mentioned. Argentina has fewer courses than Brazil and Mexico, but they are distributed in three cities, from north to south: Cordoba, Buenos Aires and Bariloche. Colombia offers two courses in different cities (Medellin and Manizales).

The concentration of the courses in a few cities owes to the fact that certain institutions started a diploma or a specialisation course, and such programmes — as part of the construction and maturation process of the project and the personnel involved — spawned a new *sensu stricto* course, with both courses being later maintained by the institution. This is the case of the *Laboratório de Estudos Avançados em Jornalismo* [Laboratory for Advanced Studies in Journalism] (Labjor) at the Universidade Estadual de Campinas (Unicamp), the UNAM, and the *Casa de Oswaldo Cruz* at the *Fundação Oswaldo Cruz*.

All the courses identified require classroom attendance, except an online programme.[4]

The above-mentioned course "Education, Dissemination and Management in Biosciences" from the UFRJ is the oldest in the region as it was established in 1994. However, the first programme specifically designed to train professionals in science communication is the Diploma in Science Dissemination, created in 1995 by the Directorate General of Science Communication at UNAM. In 1999, Brazil offered its first specific course in the field when the Laboratory for Advanced Studies in Journalism (Labjor) of the *Universidad Estadual de Campinas* created a specialisation in Science Journalism. In 2007, Labjor was also a pioneer in Brazil by offering the first master exclusively devoted to science communication in the country.

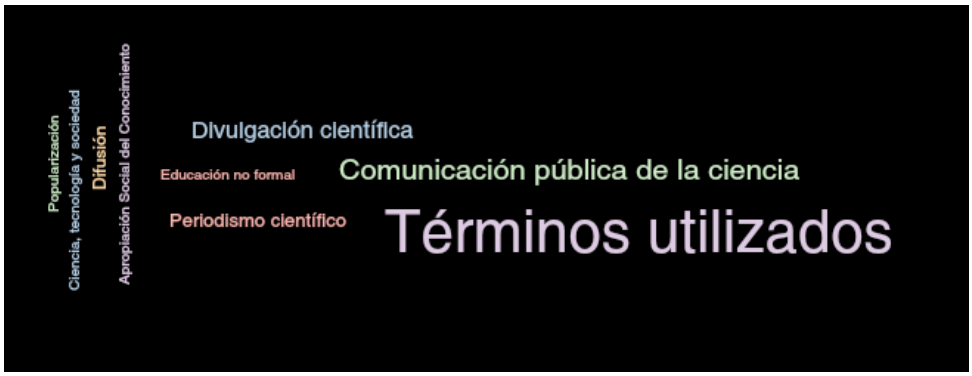
Eleven of the courses are hosted by universities, seven by research institutions, three by science museums (two of which are linked to research institutions, specifically a national association of science communication and a joint venture between state-run and private organisations).

3.2 What type of training?

Ten of the courses identified are postgraduate programmes *sensu stricto*, among which four include doctorates and masters, whilst one only includes a doctorate and the other five are master courses. Seven of the programmes are specialisation courses and six are diploma courses.

Different terms are used to refer to such training programmes (see Figure 2). The most used term was Science Communication (used by as many as fourteen courses), followed by Science Popularisation (10), Scientific Journalism (5), and Dissemination (4) and Appropriation of Science, a term that is widespread in Colombia and used to refer to one of the courses, and similarly to another in Mexico.

[4]So far, the only online programme has been offered by the SOMEDICyT, and is called "Introduction to public communication of science." Although it is an intensive course, it was not included in this study as it does not reach the minimum duration of 120 hours.



Popularisation **Science, technology and society** **Dissemination**
Social Appropriation of Knowledge **Science Popularisation**
Informal Education **Scientific Journalism**
Public Communication of Science **Terms Used**

Figure 2. Terms used to define the courses.

Out of the twenty-two courses that responded to our survey, twelve explicitly stated that their programme aims to train professionals in science communication, whilst eight responded that their goal is to train researchers in the field. Four of the courses emphasised that their goals include providing a critical perspective of science communication. The total sum of the goals expressed by the courses under this study is higher than the number of programmes actually responding to the survey, as some of them claim they have more than one goal.

Most postgraduate courses *sensu lato* or *sensu stricto* said that their purpose is not the training of professionals experienced in science communication, but rather the training of researchers in the field. For example, the Philosophy of Science postgraduate course offered by the UNAM in the field of science communication trains researchers with solid foundations in philosophy and social science studies.

The Specialisation in Popularisation of Science, Technology and Innovation of the Master in Science, Technology and Innovation held at the *Universidad Nacional de Río Negro*, in Bariloche (Argentina), aims to train researchers with a critical sense, capable of carrying out their job on the basis of the understanding of the complexity of the processes of communication in the fields of science, technology and innovation.

Other postgraduate programmes *sensu stricto* aim to train professionals in science communication with a solid theoretical basis. Such is the case of the Master in Science and Culture Communication, held at the *Instituto Tecnológico de Estudios Superiores del Occidente* [Western Technological Institute of Advanced Studies] (ITESO) of the *Universidad Jesuita de Guadalajara* in Tlaquepaque (Mexico). This degree provides education to communication professionals supplementing their training with other areas of knowledge as basic sciences, education, sociology, anthropology, history, philosophy, literature and cultural studies, so that its graduates are able to influence the development and democratisation processes through research, design, planning, management, as well as specialised and ethically-oriented intervention in projects of public communication of science; communication and cultural management; or communication, sense and power.

Many of the courses *sensu lato* were specifically devised to promote professional development. A typical example of that is the Diploma in Scientific Journalism offered by the *Centro de Bioinformática y Biología Computacional* [Center for Bioinformatics and Computational Biology] in Manizales (Colombia). The aim of this diploma course is to facilitate access to knowledge and give journalists the tools required to cover topics in the field of science and technology, enabling them to manage and publish specialised information, based on the understanding of the impact that science and technology do have on the current social-economic system and on the region in particular.

Another example is the Specialisation in Public Communication of Science and Scientific Journalism of the *Universidad Nacional de Córdoba* (Argentina), which aims to train science communicators, journalists specialised in science and technology and skilled professional communicators able to work for scientific institutions, museums and popularisation centres, as well as mass media.

There are other courses *sensu lato* that reinforce practical training with an introduction to research in science communication. Such is the case of the Specialisation Course in Popularisation of Science, Technology and Health of the *Casa de Oswaldo Cruz*, *Fundação Oswaldo Cruz* in Rio de Janeiro, established as a result of the collaboration between the *Museu da Vida*, *Casa da Ciência* at UFRJ, *Fundação Cecierj*, *Museu de Astronomia e Ciências Afins* and the *Instituto de Pesquisas Jardim Botanico do Rio de Janeiro*.

Another example of a course *sensu lato* that goes beyond the training of professionals is the Specialisation in Scientific Education and Popularisation hosted by the *Instituto Federal do Rio de Janeiro*, Mesquita, which aims to create a space for discussion of issues related to concepts and practices from the actual world on the basis of a competence acquired in the fields of pedagogy, ethics, culture and science. This programme aims to contribute to the training of teachers, researchers, and professionals alike, so that they can successfully work in the field of Scientific Education and Popularisation.

3.3 Who and what?

Answering the question about their type of audience, 19 out of 21 courses said they address a mixed audience. Some of them have general admission requirements such as holding a university degree. Others have more specific requirements as the above-mentioned Specialisation Course in Popularisation of Science, Technology and Health of the *Casa de Oswaldo Cruz*, which is addressed to professionals from different areas such as museum curators, communicators, journalists, scientists, educators, sociologists, set designers, cultural producers and science teachers. Two courses are held, one for journalists and one for scientists.

The contents of the subjects included in the curriculum vary widely in terms of quantity and approach (see Table 2). Only 17 out of the 22 courses identified provided information on the content. Among those 17 programmes, the Master and Doctorate in "Education, Dissemination and Management in Biosciences" from the *Universidade Federal do Rio de Janeiro*, which is part of the Biological Chemistry curriculum, allows students to attend courses in other departments of the university.

Table 1. Subjects included in the curriculum for the postgraduate courses.

Subjects specific to Science Communication	82
General scientific subjects	41
Subjects related to the professional field	23
Methodology	18
Education	16
Communication	13
History of science	7
Philosophy of science	5
Sociology of science	5
Epistemology	3
Literature/Language	3
Others	3
Total	**219**

In the category 'subjects specific to science communication,' we included those that are related to general aspects of the field, such as 'introduction to the subject' or 'science communication theoretical fundamentals'. More specialised subjects were also included, such as 'mess media' or 'new technologies.' The majority of the subjects were included in this category. Eighty-two subjects were identified, offered by 16 out of the 17 courses that provided information on their contents.

The second largest category refers to the contents related to scientific subjects, which includes 41 subjects offered by 12 of the 17 courses that provided information.

In relation to the conceptual structure of each programme, we found a difference in the emphasis given to different areas of knowledge. Some are characterised by a larger presence of disciplines related to communication, such as the master at ITESO; others focus more on education, as the programmes held at *Instituto Oswaldo Cruz de Fiocruz* and at the IFRJ; while others focus on history, philosophy and sociology of science, as is the case for the Master at the UNAM and the *Casa de Oswaldo Cruz de Fiocruz*. Two of the programmes (ITESO and Labjor) apparently plan to establish a connection between science and culture.

Nine of the courses that provided information on the contents of their programme include subjects related to practical aspects, such as scientific writing for mass media. This is the case of two of the six courses held in Mexico and three of the four courses in Argentina.

Finally, seven of the 17 courses that provided information on the content of their programmes include subjects related with research methodology. This category comprises five of the Brazilian programmes (which provided this type of information), two of the six courses in Mexico and one in Argentina (for an example of the curriculum see Table 2).

Table 2. Curriculum of the Master in Science, Technology and Innovation — Specialisation in Popularisation from the CT — Universidad Nacional de Río Negro (Bariloche, Argentina).

Basic Cycle (144 hours)
– History of science and technology (24 hours)
– Sociology of science (24 hours)
– Fundamentals of economy of innovation and technological change (24 hours)
– Science, technology and innovation policies (24 hours)
– Methodological workshop I: Social research methods and techniques (24 hours)
– Methodological workshop II: Scientific writing (24 hours)
Specialisation Cycle (416 hours)
– Popularisation of science, technology and innovation
– Public communication of science, technology and innovation (32 hours)
– Communication for popularisers (32 hours)
– Communication and education (32 hours)
– Science, technology and innovation in informal education (48 hours)
– Science, technology and innovation in audiovisual media (48 hours)
– Science, technology and innovation in digital media (24 hours)
– Science, technology and innovation in graphic media (48 hours)
– Communication, risk and environment (32 hours)
– Elements of linguistics for popularisers (24 hours)
– Sources and research systems (16 hours)
– Production of texts for the public communication of science, technology and innovation
– Elective seminar I (24 hours)
– Elective seminar II (24 hours)

Conclusions

Latin America covers a vast territory stretching from Mexico to Tierra del Fuego, which accounts for nearly 13% of the Earth's land surface, and is characterised by great cultural diversity. Interestingly enough, the programmes reported in this study are concentrated only in five countries and thirteen cities. This calls for strategies with the purpose of expanding the range of such courses. The experience of Mexico, where the Directorate General of Science Communication at UNAM as well as the SOMEDICyT hold diploma courses in different regions of the country, is an interesting model that could be possibly adopted by the RedPOP in coordination with nation-wide science popularisation organisations, although it may require considerable resources. On the other hand, online postgraduate degrees or semi-virtual classrooms could serve to fill the gap. To date, there are only short online courses available, and therefore a fully-fledged online diploma or postgraduate degree has yet to come in Latin America.

The first postgraduate courses in the area date back to the mid-1990s, and 65% of the courses identified were established less than ten years ago, reflecting the fact

that the exploration of this field has started only quite recently in Latin America. Trench [2012] reported that in other parts of the world the first courses in the field were established in the late 80s, most notably in Australia and the UK.

With respect to the terms used by the courses, we have noted that "science communication" and "popularisation of science" are the most frequent. However, several of the courses used other terms throughout their programmes. This may partially be an expression of the linguistic richness of Spanish and Portuguese, but it may also be the result of the lack of a consensus on the terminology, as this type of work is marked by a variety of views and approaches in the region.

While the goals defined by several courses reveal their aim to train professionals in science communication, others put a much greater emphasis on the training of researchers in this still emerging field in the region. In both cases, the diversity of the admission requirements is noticeable.

With regard to the content of the courses, while a concern to provide training in subjects with specific content related to science communication is evident, this is an element distinguishing the courses whose aim is to train hands-on professional communicators from the programmes mainly aiming to train researchers in the field. One of the challenges of such programmes concerns scientific education, as it is nearly impossible for them to provide an all-encompassing overview of science.

It is also worthwhile to note how the different approaches of these programmes influence the decision on what is to be included in them. For example, subjects such as education and communication, as well as those having science as a focus (history, philosophy, epistemology, sociology of science, etc.) actually reflect different views about this professional field. Another observation that can be made is the fact that research methodology has been included in all the programmes in Brazil and in two in Mexico. This subject has been very useful in the development of degree theses. (In the introduction to this paper we mentioned the fact that Brazil can count on more than 200 theses in science communication.) No other country explicitly reports the presence of this kind of topics, which does not imply they are not included in other subjects.

The curriculum of these programmes does not seem to be characteristic to each country, yet it seems to be highly influenced by the history of the institution hosting the course, as Felicity Mellor [2013] pointed out.

This study was based on information provided by representatives from the various institutions hosting the programmes. While this information is important and provides valuable elements for analysis and reflection, it would be extremely useful to interview those representatives to delve deeper into other aspects such as the reasons behind the decision to establish the programmes, and their visions related to the field of science communication. Finally, it would be extremely useful to complete the study with a follow-up on the graduates from these programmes to learn about their career paths and the influence they had in their professional lives.

Translated by Massimo Caregnato

Appendix A. Survey on science communication postgraduate studies in Latin America and the Caribbean (short version)

- Name of the course
- Level of the course (choose a corresponding item)
  - Doctorate / Master / Specialisation / Diploma
  - Independent course / Other (please specify)
- Type of course (chose a corresponding item)
  - Classroom attendance Seat of the course: / Online/ Semi-virtual Seat of the course:
- Objective of the course
- Website of the course / Blog of the course
- Institutional data
- Degree awarded
- Please specify the method used for the final assessment of the graduates
  - Thesis/ Dissertation /Traineeship/ Final task / Other
- a) If you chose "Other" in question 20, please specify
- Does it have an official approval? No Yes / Please specify the organism approving the course, if this is the case
- Year of the establishment of the course
- Does it have the support of any funding organism? / Name of funder
- Addressees
- Profile of the graduate
- Paid activity: Yes/ No Are there any scholarships available? ( ) Yes ( ) No Natives/residents/foreigners
- Structure of the course (please list the mandatory and elective seminars)
- Total hours /Duration in months
- Please comment the strengths and weaknesses of the postgraduate course structure at your institution
- What are the main lines of research?
- Are you a member of RedPOP? ( ) Yes ( ) No
- Do you know other courses this survey should be addressed to in your country or other countries of Latin America and the Caribbean? Please specify the name of the course, institution, contact person or contact information
- Name, position and contacts of the person filling out this questionnaire

Table 3: Academic offer of postgraduate courses in Latin America by education level.*

Name of the course	Institiution hosting the course	City	Country
DIPLOMA PROGRAMMES			
Diplomado de Divulgación de la Ciencia (Diploma in Science Popularisation)	Dirección General de Divulgación de la Ciencia de la Universidad Nacional Autónoma de México (UNAM)	Mexico City	Mexico
Diplomado en Comunicación Pública de la Ciencia y la Tecnología (Diploma in Public Communication of Science and Technology)	Sociedad Mexicana para la Divulgación de la Ciencia y la Técnica	Mexico City	Mexico
Diplomado en Comunicación de la Ciencia y Periodismo Científico (Diploma in Science Communication and Scientific Journalism)	Centro Morelense de Comunicación de la Ciencia	Cuernavaca	Mexico
Diplomado en Periodismo Científico (Diploma in Scientific Journalism)	Centro de Bioinformática y Biología Computacional de Colombia, Universidad de Manizales	Manizales	Colombia
Postítulo en Comunicación de la Ciencia (Specialised Postgraduate Programme in Science Communication)	Facultad de Ciencias de la Universidad de Chile	Santiago	Chile

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Table 3: *Continued from the previous page.*

Name of the course	Institiution hosting the course	City	Country
SPECIALISATION PROGRAMMES			
Especialización en Comunicación Pública de la Ciencia y Periodismo Científico (Specialisation in Public Communication of Science and Scientific Journalism)	Universidad Nacional de Córdoba (UNC)	Cordoba	Argentina
Carrera de Especialización en Comunicación Pública de la Ciencia y la Tecnología (Specialisation Degree in Public Communication of Science and Technology)	Facultad de Ciencias Exactas y Naturales, Facultad de Filosofía y Letras, Facultad de Ciencias Sociales de la Universidad de Buenos Aires (UBA)	Buenos Aires	Argentina
Especialización en Divulgación de la Ciencia, la Tecnología y la Innovación (Specialisation in Popularisation of Science, Technology and Innovation)	Sede Andina de la Universidad Nacional de Río Negro (UNRN)	Bariloche	Argentina
Especialização em Educação e Divulgação Científica (Specialisation in Scientific Education and Popularisation)	Instituto Federal do Rio de Janeiro (IFRJ)	Rio de Janeiro	Brazil
Divulgação da Ciência, da Tecnologia e da Saúde (Popularisation of Science, Technology and Health)	Fundação Oswaldo Cruz (Fiocruz), Museu de Astronomia e Ciências Afins, Fundação CECIERJ, Instituto de Pesquisa Jardim Botânico do Rio de Janeiro, Casa da Ciência (UFRJ)	Rio de Janeiro	Brazil
Curso de Pos-grado — Especialización en Periodismo Científico (Postgraduate Course — Specialisation in Scientific Journalism)	Laboratório de Jornalismo Científico (Labjor), Departamento de Política Científica e Tecnológica del Instituto de Geociencias; Departamento de Multimeios del Instituto de Arte, Universidade Estadual de Campinas (Unicamp)	Campinas	Brazil
Especialidad en Divulgación de la Economía (Specialisation in Popularisation of Economy)	Museo Interactivo de la Economía (MIDE)	Mexico City	Mexico

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Table 3: *Continued from the previous page.*

Name of the course	Institiution hosting the course	City	Country
MASTER PROGRAMMES			
Maestría en Ciencia, Tecnología e Innovación, Orientación en Divulgación de la Ciencia, la Tecnología y la Innovación (Master in Science, Technology and Innovation, Specialisation in Popularisation of Science, Technology and Innovation)	Universidad Nacional de Río Negro (UNRN)	Bariloche	Argentina
Ensino em Biociências e Saúde (Teaching of Biosciences and Health)	Instituto Oswaldo Cruz (IOC), Fundação Oswaldo Cruz	Rio de Janeiro	Brazil
Divulgação Científica e Cultural (Scientific and Cultural Popularisation)	Laboratório de Estudos Avançados em Jornalismo Instituto de Estudos da Linguagem Universidade Estadual de Campinas (Unicamp)	Campinas	Brazil
Mestrado em Divulgação da Ciência, da Tecnologia e da Saúde (Master in Popularisation of Science, Technology and Health)	Casa de Oswaldo Cruz/ Fundação Oswaldo Cruz (Fiocruz); Instituto de Pesquisa Jardim Botânico do Rio de Janeiro; Museu de Astronomia e Ciências Afins; Fundação CECIERJ; Universidade Federal do Rio de Janeiro (UFRJ). Collaboration: Cornell University (U.S.A.); Oregon State University (U.S.A.); Scuola Internazionale Superiore di Studi Avanzati (Italy); Université Paris 8 (France).	Rio de Janeiro	Brazil
Programa de Pós-Graduação Stricto Sensu em Informação e Comunicação em Saúde (PPGICS) (Postgraduate Programme Sensu Stricto in Information and Communication in Health)	Instituto de Comunicação e Informação Científica e Tecnológica em Saúde (Icict), Fundação Oswaldo Cruz (Fiocruz)	Rio de Janeiro	Brazil

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Table 3: *Continued from the previous page.*

Name of the course	Institiution hosting the course	City	Country
Educação, Difusão e Gestão em Biociências (Education, Dissemination and Management in Biosciences)	Instituto de Bioquímica Médica Universidade Federal do Rio de Janeiro (UFRJ)	Rio de Janeiro	Brazil
Posgrado en Filosofía de la Ciencia, línea de Comunicación de la Ciencia (Postgraduate degree in Philosophy of Science, Specialisation in Science Communication)	Instituto de Investigaciones Filosóficas, Facultad de Filosofía y Letras, Facultad de Ciencias y Dirección General de Comunicación de la Ciencia, Universidad Nacional Autónoma de México (UNAM)	Mexico City	Mexico
Maestría en Comunicación de la Ciencia y la Cultura (Master in Science and Culture Communication)	Instituto Tecnológico y de Estudios Superiores de Occidente	Jalisco	Mexico
Estudios de Ciencia, Tecnología e Innovación (CTS+i) (Studies of Science, Technology and Innovation)	Instituto Tecnológico Metropolitano (ITM)	Medellín	Colombia

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Table 3: *Continued from the previous page.*

Name of the course	Institiution hosting the course	City	Country
DOCTORATE PROGRAMMES			
Ensino em Biociências e Saúde (Teaching of Biosciences and Health)	Instituto Oswaldo Cruz (IOC), Fundação Oswaldo Cruz (Fiocruz)	Rio de Janeiro	Brazil
Doutorado Multi-institucional e Multidisciplinar em Difusão do Conhecimento (Multi-institutional Doctorate and Multidisciplinary Degree in Dissemination of Knowledge)	Universidade Federal da Bahia; Universidade Estadual de Bahia; Instituro Federal de Educação, Ciência e Tecnologia; Universidade Estadual de Feira de Santana; Federação das Indústrias do Estado de Bahia; Laboratório Nacional de Computação Científica; Instituto de Humanidades, Artes e Ciências de Bahia	Salvador de Bahía	Brazil
Programa de Pós-Graduação Stricto Sensu em Informação e Comunicação em Saúde (PPGICS) (Postgraduate Programme Sensu Stricto in Information and Communication in Health)	Instituto de Comunicação e Informação Científica e Tecnológica em Saúde (Icict), Fundação Oswaldo Cruz (Fiocruz)	Rio de Janeiro	Brazil
Educação, Difusão e Gestão em Biociências (Education, Dissemination and Management in Biosciences)	Instituto de Bioquímica Médica Universidade Federal do Rio de Janeiro (UFRJ)	Rio de Janeiro	Brazil
Posgrado en Filosofía de la Ciencia, línea de Comunicación de la Ciencia (Postgraduate degree in Philosophy of Science, Specialisation in Communication of Science)	Instituto de Investigaciones Filosóficas, Facultad de Filosofía y Letras, Facultad de Ciencias y Dirección General de Comunicación de la Ciencia, Universidad Nacional Autónoma de México (UNAM)	Mexico City	Mexico

* The sum of the courses listed in this table is more than 22 as we identified separately the courses offering a Master's Degree and a PhD.

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