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Comment

MASTER IN SCIENCE COMMUNICATION: AN OVERVIEW

Master in Scientific, Medical and Environmental Communication

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ABSTRACT: Public communication of sciences is of strategic relevance in the transition from the industrial society to the knowledge society. The Master's Course in Scientific, Medical and Environmental Communication of Pompeu Fabra University in Barcelona (Spain) responds to this economic, social and cultural need. The result: professionals who clearly understand the key aspects of the transmission of scientific knowledge to society through the different essential communication channels in multiple organizations as, among others, mass media, institutional and public relations and museums. This initiative collaborates also to build informed and educated citizens, who understand, accompany and are able to participate in the necessary and unavoidable adaptation to this new society.

We are at an historic moment, defined by the evolution and transition from the industrial society to the knowledge society, the development of which is principally based on the rapid incorporation of scientific innovations into daily life. For this reason, the transformations that accompany this evolution are not only economic but also, particularly, cultural and social. It is therefore increasingly necessary to initiate strategies aimed at publicizing this new knowledge and its possible applications and uses and the ethical, social, economic and political questions deriving from them.

Public communication of the sciences is of strategic relevance in this context. There can be no doubt that, with the changes that are taking place in our society and in the process of transition toward a knowledge-based economy, the traditional formula of RDI has become essential for attaining a competent position on the world stage. It seems, however, clear that the sum of research, development and innovation should not leave out another essential variable to allow this socioeconomic reaction to work and turn us into a cohesive society on the front line of the 21st century: informed and educated citizens who understand, accompany and are able to participate in the necessary and unavoidable adaptation to the new economic, social and even cultural model that makes up the knowledge society.

The importance of education and scientific-technological training of citizens in order to ensure the development of the knowledge society has been considered a critical objective by many experts and thinkers, such as Richard V. Knight, who considers it essential that knowledge be defined and perceived by society as a form of wealth and well-being. As a result, we need to add a variable to our traditional formula of R+D+I, so that it can be really effective. An essential variable that, as a catalyst, sets off the chain reaction: C for scientific communication, scientific culture and creative citizenship that will turn us into a properly prepared and competent community.

Thus, the resulting formula is R+D+I+C, in which R is the necessary skill in the field of basic and applied scientific research, D is the sufficient social and economic development that derives from it, I is the decided will to individual and collective innovation and creation, and C is the indispensable strengthening of public communication of science that allows us to attain an suitable scientific culture and a prepared and solvent society. This formula is essential for establishing this strategic scenario that we need to promote in order to achieve an appropriate and successful transition to the knowledge society.

The Master's Course in Scientific, Medical and Environmental Communication of Pompeu Fabra University in Barcelona responds to this economic, social and cultural need for professionals who clearly understand the key aspects of the transmission of scientific knowledge to society through the different

essential communication channels for multiple organizations: the mass media, the publishing world, enterprise, institutional relations, museums, etc. The essentially practical programme has adapted over the past 15 years to the continuous changes that take place in our society. It has a broad representation of national and international professionals from different areas, who provide real contact with the world of scientific, medical and environmental communication, from working journalists to experts in scientific museum studies. The programme is rounded off with "a la carte practical work experience" according to the individual interests of the participants in the course. These range from work experience, for example, in the San Francisco Exploratorium to professional internships in communication departments of Spanish and European hospitals, universities and research centres (such as CERN in Geneva) and, naturally, including different types of practical work experience in different types of media. Students who prefer to make a more in-depth study of the transmission of scientific knowledge to society via the different routes can also carry out work experience in the Science Communication Observatory of Journalism Studies at Pompeu Fabra University.

The Science Communication Observatory (SCO) was the first university research body dedicated to scientific communication created in Spain (1994). Its main objective is to study the various stages that compose the process of conveying scientific, medical, environmental and technological knowledge to the society, and also to analyse the relationship between science, media and society. The SCO develops specialised research programmes, organises postgraduate and master courses in Science Communication, publishes several reports and carries out various other activities in the field of dissemination, such as seminars, conferences, academic sessions, science events and exhibitions. The Science Communication Observatory is linked to the international network on Public Communication of Science & Technology (PCST), which includes individuals from around the world who are active in producing and studying PCST through science journalism, science museums and science centres, academic researchers in social and experimental sciences, scientists who deal with the public, public information officers for scientific institutions and others related to science in society issues.[*]

Scientific communication, understood as the process of public transmission and diffusion of scientific knowledge, holds a key place in the development of society. Science influences all aspects of human life: in the professional and intellectual spheres, in health care, environment, welfare, leisure, etc. It is essential to understand the scope of the new technologies and the advances in knowledge: it thus increases the critical capacity of the citizens, both in small day-to-day decisions such as in different professional areas, not forgetting the ethical debate and its relation to the big challenges of the future. The way in which new knowledge is disseminated and the agents responsible for this communication are determining factors in the configuration of the opinions and attitudes of the public with regard to science.

Scientists, physicians, journalists, professionals in museums and science centres and institutional communication agents (including research centres, universities, pharmaceutical laboratories, NGOs, public administrations and cultural managers) take part in the process of social communication of science and play an increasingly recognized role, generating a growing employment market. Alumni of our master's course are, today, editors of the Spanish edition of *National Geographic*, communication directors in public hospitals, science writers in the communication departments of universities and research centres, specialist journalists in television, radio and press, webmasters of Internet portals, public relations directors and directors of communication in pharmaceutical companies, members of companies that produce modules for interactive science museums, editors and presenters of popularization programmes and documentaries, etc.

The Master's in Scientific, Medical and Environmental Communication analyses and teaches us to work with:

- the sources of scientific information
- the forms of transmission of this information
- relationships between experts, technological industries and society
- the social impact of discoveries
- associated ethical problems
- public perception of science

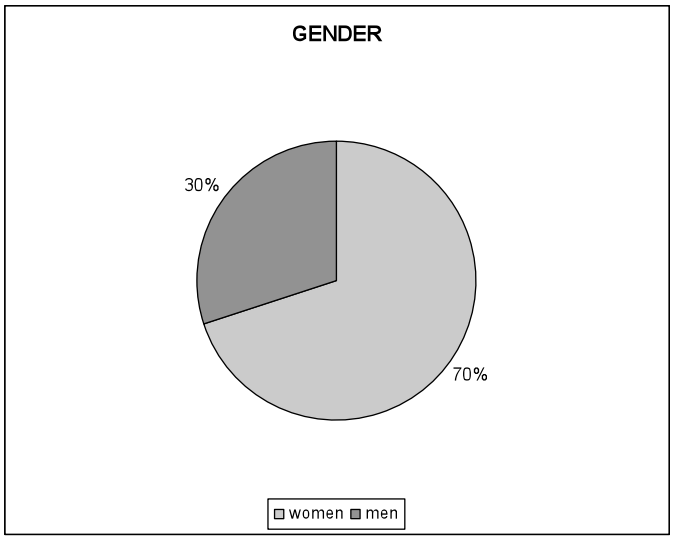
[*] See: www.pcstacademy.org.

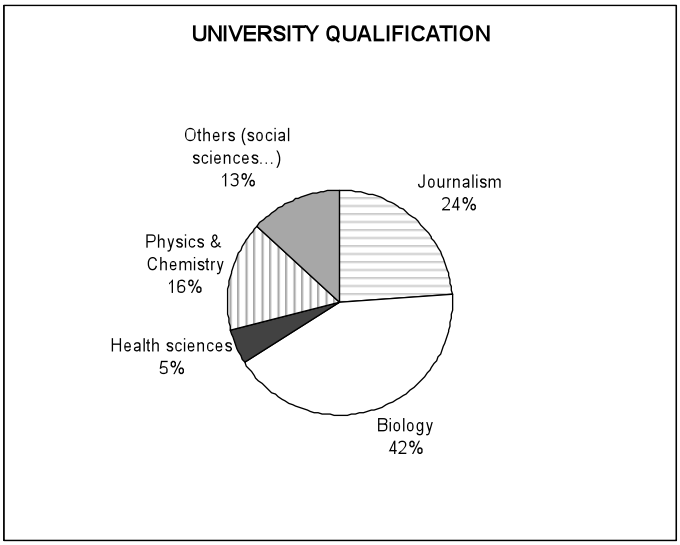
The module of the programme dedicated to medical communication focuses on the transmission of medical and health knowledge, the basis of important economic and social implications that are essential for health care education and the health of the population. For this reason, society increasingly requires this communication to be carried out in an appropriate, rigorous and efficient way.

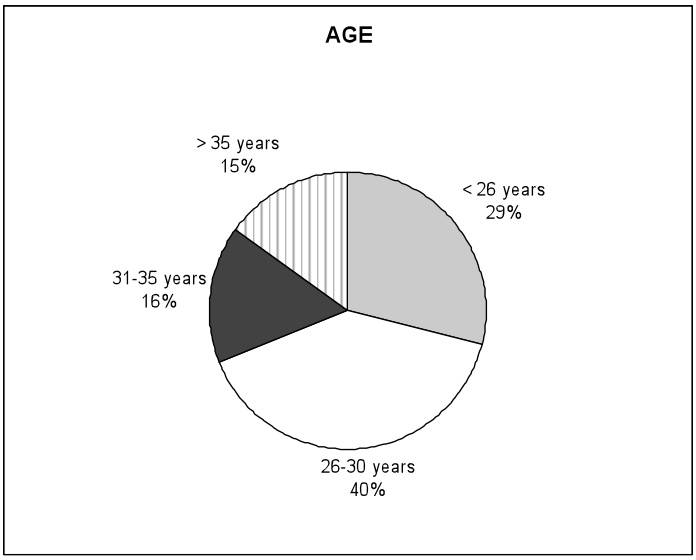
Environmental communication analyses the process of transmission of information relating to the big environmental questions, with special attention to the challenges of biotechnology and genetic engineering, and aims to clarify the dispersion of ideas on environmental knowledge, culture and education.

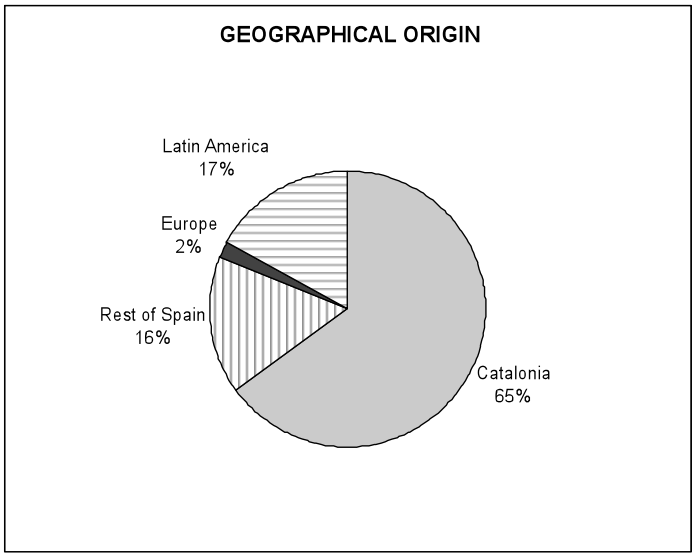
The master's programme is updated each year according to scientific and social development and the transformations that take place in the communication system. Furthermore, using the analysis of current problems, the master's offers a prospective study of the evolution of the different areas and disciplines involved. It is an experience of pioneering training and an initiative with high social value, with considerable professional applications.

An average of 25 students take the course each year in Barcelona, from January to December, with a break in July and August, which some use to carry out practical work. The students must attend 320 hours of classes and dedicate a minimum of 100 hours to a working experience in the field. An adapted edition also began in 2008 in Buenos Aires, Argentina, with more than 30 applicants, and will continue in the coming academic years, so that, from now, the master's course can be taken in both Spain and Argentina. Most of the students receive substantial grants to pay for the course fees from the company Novartis España, which has subsidized the master's course from the beginning (and now, Novartis Argentina is also subsidizing the Buenos Aires edition). The characteristics and profile of the students of the first 14 editions are as follows:




UNIVERSITY QUALIFICATION
Others (social sciences...) 13%
Journalism 24%
Physics & Chemistry 16%
Health sciences 5%
Biology 42%


AGE
> 35 years 15%
< 26 years 29%
31-35 years 16%
26-30 years 40%



The last edition of the master's course was inaugurated by Philip Campbell, director of *Nature*, who gave a talk entitled "Communicating science to researchers, science's stakeholders and publics". Campbell called for increased participation from scientists in the popularization of scientific matters and asked them to take the initiative to "catch society's attention and try to communicate beyond science". With regard to this, the director of Nature gave as an example the proliferation of blogs by researchers in the Unites States. "More and more scientists are taking part in this way of communicating and are therefore inspiring journalists to become a new source of information. They also raise the bar in their own profession as journalists", he stated. During his contribution, Campbell pointed out that scientists must take part and enter into debates regarding "the uncertainty of science" or which scientific theories may be regarded as questionable facts. He pointed out that "researchers must be more assertive and must not be afraid of entering into some debates in the public arena".

Author

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