

**Public policies and mechanisms for the development of scientific culture in Latin
America and the Caribbean**

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Abstract

Knowledge societies need knowledge citizens. Latin American and Caribbean countries have understood this and have promoted various mechanisms and policies focused on the incorporation of the science and technology popularization.

Evidence of this is the importance that Latin American governments have gradually

given, in recent years, to the dissemination of science in public agendas and policy.

This panel session aims to contribute to the debate on policy and mechanisms, and implementation processes, carried out to implement the popularization of science in the Latin American and Caribbean countries.

It is essential to emphasize the tools that contribute, through its dissemination and exchange of experience and best practices, to propose policies and hemispheric strategies on the science and technology popularization.

This panel will present on one hand the results of the survey of popularization policies and mechanisms conducted by UNESCO Montevideo and the Network for the Popularization of Science and Technology in Latin America and the Caribbean (Red POP) in the countries of the region. It is a collection of policies and mechanisms contributing to the dissemination of science in Latin America and the Caribbean.

The survey offers to researchers and policy makers some of mechanisms and strategies implemented by the countries of the region.

On the other hand the panel will present and share experiences in this field carried out by the leading institutions of science and technology (ministries/authorities) of Argentina , Brazil, Chile and Mexico highlighting the importance of sharing knowledge, expertise and capabilities.

Results will be presented with particular emphasis on the mechanisms and policies for social inclusion and political participation; mainly because policies and instruments entered the agenda of many countries, specifically related to the issue of social inclusion.

Introduction

Only through building sustainable knowledge societies can Latin American and Caribbean (LAC) countries face the challenges of sustainable development in its three dimensions environmental, economic and social. Due to this, knowledge societies need knowledge citizens, in order to make scientific culture a key tool in the construction of citizenship. Scientific culture is, therefore, in the core of these societies, and its development involves new policies and new management strategies of STI activities.

Latin America and the Caribbean countries have understood this and over recent years have put even greater emphasis on Science, Technology and Innovation (STI)

funding and on the design and implementation of STI policies.

In this framework, scientific culture has climbed the rankings in the agendas of the National Science and Technology Agencies (NSTA) and countries have implemented various mechanisms specifically to promote it.

Evidence of this is the effervescence period that can be observed in countries with relatively high level of development of STI National System (as Argentina, Brazil, Chile and Mexico), through greater involvement of the scientific community, institutions and universities as well as greater support from the public authorities to scientific publication. Testimonials of these changes are the creation of the *Departamento de Popularização e Difusão da Ciência e Tecnologia* in Brazil or the *Programa Nacional de Popularización de la Ciencia y la Tecnología* in Argentina or a change to the law of science and technology in Mexico where it has been incorporated explicitly promoting and strengthening science.

In this regard, in order to contribute to understanding the paths chosen by LAC countries, in this subject, and provide tools for the formulation of policies and the design of mechanisms to promote and building scientific culture, this study aims to investigate the space occupied by the scientific culture in STI public policies in the region, and more specifically how NSTA manage and allocate resources to mechanisms focused on the development of it.

For this purpose, we have made a preliminary mapping of public policies and mechanisms offer in the region, using a *desk review* methodology with a first step of defining criteria for the collection and analysis and a second of compilation. As a central tool for the study the UNESCO SPIN platform has been used and then fed back with the result of the study¹.

The paper examines, first, the normative and structural dimension, identifying public institutions implementing programs and experiences in the scientific culture field, including those that define or implement policies at national level. It seeks to identify how the scientific culture's promotion policies sub-system is composed in each country, analysing at the same time the scientific culture's promotional national policies *ad hoc* (in

¹ The study made for the preparation of this work is being expanded with an ad hoc survey made by UNESCO Montevideo and Red POP in the regional countries which is expected to count with a more exhaustive informative version

the cases in which they exist), national STI plans, correspondent legal framework, as well as aspects that define politic guidelines of the NSTA in the subject.

The analysis developed in this paper allows to identify the key actors and understanding their strategies approach, identifying priority target groups (for example, if they are focused on awakening scientific vocations in children and youngster or rather directed to the general public) and understanding the different types of mechanisms and the relative weight of these within the overall framework of STI policies.

It's worth to mention that the first methodological difficulty at the moment of undertaking an effective investigation in this matter is the dispersion of names and concepts, the lack of an internationally recognized definition and of academics consensus on its approach².

The LAC countries utilize often synonymously, other terms among which the most used are: "popularization", "dissemination" "promotion" and "communication" of science. "Social appropriation of science" and "development of scientific culture" appear as intimately linked to these concepts particularly over recent years. While we recognize that this is not merely a matter of semantics or synonyms, more specific elucidation is beyond the scope of this work. For the purposes of this paper we understand that the "development of a scientific culture" can be used as a more comprehensive concept (like an umbrella term) which incorporates the other without denying the differences between them.

Policy legislation and prospective structural dimension

The development of a scientific culture in the broad sense discussed *ut supra* has been incorporated into the laws, policies and institutions of science and technology in all countries surveyed, although as we said, using different terminologies and with different degrees of importance and visibility. This is a very important detail because, in spite of the concern that this issue already wake in those countries back then a decade ago only in a few cases that was reflected in the STI national plans or in the goals and vision of

² Rubén Mesía Maraví, *Ciencia para todos? algunas reflexiones acerca de la popularización de la ciencia*, investigación Educativa Vol. 15 N.º 27, 189-206 Enero-Junio 2011, ISSN 1728-5852

NSTA strategies'³.

First of all, not all countries have a legal framework or specific legal regulations that support the science, and in particular its dissemination and socialization. In recent times, some countries have begun to incorporate references to scientific culture in their legal frameworks or have specific laws and regulations on the subject. A closer look allows us to divide into three different approaches such incorporation.

On one hand, it is possible to identify countries whose legal frameworks are more focused on access to knowledge than in dissemination (Argentina and Ecuador for example), which seeks to ensure access to scientific and technological knowledge for all sectors of society in equal opportunities.

In another group of countries, the only mention in the legislation is the identification of science popularization and scientific culture among NSTA goals and visions or for the establishment of *ad hoc* bodies, as part of Science and Technology National System, with the aim of promoting the integration of scientific and innovation culture (Colombia and Chile case).

Finally, it is possible to identify countries where there are laws (such as Costa Rica, Colombia, Guatemala, Mexico and Paraguay, among others) that dedicated parts or whole chapters to the dissemination of science and technology or that explicitly provide resources to encourage the popularization (finance fairs, festivals or awards to encourage the dissemination of science and technology).

Regarding the existence of specific public policies to promote scientific culture, it is noteworthy that, despite the creation of an *ad hoc* policy that represents an explicit indication of the degree of priority given to the subject, in prior decades this has not been the case in most of the countries of the region. Even today only a few countries have specific national policies or strategies of social appropriation of science (such as Colombia and Mexico), or incorporated between the specific objectives of the highest level of the STI general policies disseminate and promote STI in the society (as in the case of El Salvador).

In most of the countries surveyed (except for some like Honduras, Bolivia and

³ The analysis of the relevance of each terms used and the degree of "theoretical intentionality" of the choice of them, is for further work.

Ecuador, among others) specific programs were created in the NSTA, or scientific culture references were added to priorities and strategic directions of any direct NSTA dependence. Emphasis on creating programs to promote communication of science both in formal and non-formal education sector, thus stimulating the scientific culture of the country as a tool to improve the quality of life of the population is made, in different cases. The creation of specific programs underscores the emphasis that states have assigned to the popularity in recent years, channelling a series of activities and tools that had been developed in a specific area of the STI National Systems.

Further evidence that Latin American governments are slowly paying attention to the importance of scientific culture in public policies and STI agendas it is currently analysing the latest national STI plans.

The vast majority of them incorporate objectives such as the popularization of science in order to promote community involvement and social appropriation of knowledge, to awaken scientific vocations (with particular emphasis on children and youngest) and contribute to building an inclusive scientific culture.

In some of these plans there are strategies to strengthen and support the social appropriation of science, through the development of actions aimed at dissemination, perception, social recognition and use of STI.

In spite of these advances, still remain a fragmentary or emerging situation in relation to specific public policies and the existence of legal frameworks for science popularization or any other strategies for scientific culture's development.

Mechanisms, programs and projects of scientific culture's implementation

In most countries, as outlined above, the main activities doomed to develop a scientific culture are carried out by dedicated national programs. Nevertheless, the absence of a specific program should not be associated with lack of action and mechanism.

Similarly, the absence of a large number of mechanisms in some countries should not necessarily be interpreted as lack of activities for the development of scientific culture in the country, due to this it should be said that most of the activities are not developed directly by NSTA or NSTA dependence.

LAC countries have implemented different types of STI mechanisms in order to develop scientific culture's policies or plans. Based on different approach identified during the investigation we have developed a classification of the most frequent action of STI aimed to develop scientific culture (although incomplete and not exhaustive):

Categorization of activities:

SCIENCE FAIR	TRAINING	SCIENCE AWARDS	DIGITAL LITERACY	MUSEUMS	OTHER
Fairs/National Science Weeks/Science Festival	Roundtables/Workshops/Meetings/Camps/other training initiative	Contests/Awards/Calls/ Grants	Websites/TV programs	Science and Technology museum, interactive science museums, natural history museums, zoos, botanical gardens, etc.	Science Olympiads science clubs

Target Audience:

Youth/Teens/Students	Kids	General Audience	Science Journalists	Researchers/Teachers
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Regarding the type of mechanisms used, it can be argued that in order to encourage research and scientific experimentation, enhancing the process of creating and using models, provide spaces for the use of innovative technologies and promote scientific dissemination, most countries are carried out fairs, weeks, festivals and scientific Olympiads (as performed in Argentina, Bolivia, Brazil, Costa Rica, Mexico and Uruguay among others). These activities are aimed at a general audience, but they focus on developing the capacity of children and young people, in school age, to appropriate the benefits of science and technology, through promoting scientific culture (to encourage

the scientific culture).

To provide a more flexible learning environment, empowering children and adolescents, and complementary to formal education, projects such as science clubs are implemented (Argentina, Cuba, Uruguay and Venezuela for example). Furthermore, it should also be mentioned the importance of capacity building events such as workshops, camps, meetings and STI conferences.

In almost all countries, moreover, contests and awards are held to encourage scientific development (especially in Argentina and Chile) to strengthen the endogenous capacity to develop science. These actions are not only held for the youth but also for scientific journalists, researchers and teachers.

Taking into account, the importance of the scientific popularization process and the perks for society, scientific journalism in the region is still asking for mechanisms for its development. So far, not many countries have scientific journalism association and few NSTA have enough mechanisms to promote and strengthen them.

Nevertheless, with the aim to promote the search of a better quality and stability in scientific information in the mass media, different countries have established awards and calls for scientific journalist and communicators. In order to strengthen this area in recent years there have begun to develop master and specializations in science public communication and science journalism (especially in Argentina and Mexico), although it can be argued that there are previous experiences, in the prior decades, of training activities related to science public communication such as courses, diploma, workshops, etc.

In Brazil, for example, are being taken, especially in recent times, initiatives dedicated to the training of “mediators”, although such initiatives are produced in small quantities, especially considering the number of cultural and scientific Brazilian areas and the continental dimensions of the country.

Besides, is also worth mentioning activities, carried out in different countries, dedicated to scientific communication using mass media as a platform (radio, press, TV, Internet), as well as exhibitions and museums, theatre, publishing collections and other science journalism activities.

Regarding the applied mechanisms’ target audience, a large number is focused

exclusively on public such as children and young people (or students) and aim to promote vocations and interest in the sciences, while stimulating the development of their maximum potential in this field. Anyway, it is possible to identify a large number of mechanisms aimed to a general audience, often linked to scientific literacy.

A peculiarity of the mechanisms in some countries links scientific culture with other STI policy priority issues. For example, we can underline the existence of scientific culture's mechanisms focused on gender, as in the case of scientific conference "*Mujeres Protagonistas de la Ciencia*" from Chile, or others benefitting indigenous communities as target audience, as some activities implemented in Bolivia.

Science museums are one of the best resources for science communication, in all countries of the region. Museums, along with science and technology centers (as well as interactive science museums, natural history museums, zoos, botanical gardens, aquariums, etc.) constitute an extremely useful tool to develop scientific culture in society as a whole.

However, they represent a universe difficult to analyse, because of the diversity of dependence units, from private to public, university, dependent on municipalities, local authorities, or provinces, NGOs, among others.

In other words, not all museums can be linked directly to NSTA or are part of the STI National System, although, in some countries, they may be subject to specific policies and mechanisms by those.

Something similar regards universities, which being the main responsible for both scientific and technological activities and for the training of professionals and researchers in many countries assume a key role in the development of scientific culture in the country, frequently implemented their own policies and instruments in this regard.

Conclusions

The research conducted shows that there is no direct relationship between the degree of political priority assigned by countries to develop a scientific culture and the development of mechanisms for building it. The analysis reflects how some countries assign high priority to the political incorporation of STI popularization, while others implement various specific mechanisms, despite a lower level of political priority given

to this area.

The region's experience as for the implementation of policies and mechanisms to promote and build scientific culture is vast and diverse, and has been enhanced in recent years. However, the analysis reveals a certain degree of heterogeneity between countries due to variables such as different levels of development of the STI system, and its structure (degree of decentralization of the state, among others) or R&D investment, among others. In order to advance towards supporting countries in developing their own policy approaches, it is fundamental to understand that policies and policy mechanisms depend on national characteristics and are therefore difficult to transfer through different realities

This incipient implementation of public policies and specific laws for scientific culture promotion could mark the beginning of a reorientation of STI systems in the region, where the promotion of scientific culture, along with *science's education*, appears in the medium term at the same level as the promotion of R&D or technology transfer as policies' articulating axes.

At the same time, at the micro level, currently there is a significant base of "best practices" for *STI policies decision makers* in the region that will allow further development of mechanisms for scientific culture's promotion. However, there are some specific areas, for example linked to the strengthening of scientific journalism and the promotion of social networks use for science communication, which in many countries have yet scanty mechanisms.

However, up to now there has been no systematization or analysis of "good practices" that can guide countries in the design of policies and implementation mechanisms.

Finally, the research highlights how in different countries the importance and the need to incorporate and promote the teaching of science in educational system as a key aspect to building a scientific culture (Mexico and Uruguay, among others) are highlighted. However, this aspect is not addressed in detail in this work.

It is left still behind both the analysis and evaluation of the mechanisms' impact and the activities meant to strengthen scientific culture. The kind of objectives these mechanisms propose make difficult certain evaluation processes and even results are hard

to be effectively measured⁴.

The lack of tracking and management indicators over the financed activities, as well as the still underdeveloped public communication of science and technologies' evaluation methodologies makes the impact evaluation even harder.

⁴ <http://www.ciencia-sociedad.org/wp-content/uploads/2012/05/Maldonado-2011.pdf>

ARGENTINA*

Argentina has a rich history of scientific activity. However, until the last decade scientific research was not considered key for the economic development of the country and the welfare of its population. This perception has changed dramatically in the past ten years. The development of science and technology has become a state policy, which led to the creation of the Ministry for Science, Technology and Productive Innovation in 2007. A long term plan for science, technology and innovation was developed (see <http://www.argentinainnovadora2020.mincyt.gob.ar>).

Along with this change in the perception of the role of science and technology for the development of the country came the recognition that more scientists, engineers, etc. were needed and will be needed in the near future to satisfy the increasing demand of industry and research centers. Therefore, we want more young people to choose careers related to science and technology. Also, we want our citizens to be able to value and understand science and technology as tools for adding value to our production, generating more qualified jobs, solving urgent and complex problems (such as health issues, environmental problems, energy and water supplies, etc.) and ultimately adding to our welfare. We want our citizens to be able to understand how science works and how it interacts with their everyday life and to be able to consciously take part in decisions that affect science and technology policy. Moreover, we want to empower our citizens through science and provide them with intellectual and factual tools that will help them to make better decisions and choices for themselves. As a result of all this, it was recognized by the Ministry of Science that science communication and popularization are also part of the complex process of research, discovery, advancement of knowledge, technological development and application, and social and economical development. Therefore special policies has to be designed to address this needs. A number of actions and programs for science communication and popularization have been designed and started over the last ten years by the Ministry of Science, Technology and Productive Innovation, and formerly by the Secretary of Science and Technology.

In 2012 it was decided that all these actions would be organized and coordinated by a special administrative unit, the National Program for Science Popularization.

The main actions are listed below:

- Creation of a television channel, Tec TV. It broadcasts exclusively programs related to science and technology. Its main target is young people and teenagers (see <http://www.tectv.gob.ar>); - Participation in Tecnópolis, a megaexhibition of science, technology and arts. It occupies 600.000 m² and is open from July to November. It opened for the first time in 2011 and has had about 4.000.000 visitors per year (see <http://tecnopolis.ar>).
- Planning and construction of the Centro Cultural de la Ciencia – C3, a center for cultural activities related to science, including an interactive museum, an auditorium, workshops for engaging teachers and children in science activities, a television study, etc.
- the National Science Week, which encourages scientific institutions to open their doors and interact with the local communities in a variety of ways (conferences, workshops, lab experiences, etc.).
- a network of Science Clubs.
- a special funding instrument, that allows institutions to apply for support for activities related to public science communication that operate in the same way as usual research grants
- CINECIEN, a scientific film competition and exhibition.
- INNOVAR, a competition for innovative products.

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BRAZIL*

Nos últimos anos, observa-se um período de efervescência nas atividades de divulgação científica no Brasil, com um maior engajamento da comunidade científica, das instituições de pesquisa e das universidades. Observa-se, também, um apoio maior por parte dos poderes públicos à divulgação científica. Exemplo disso foi a criação, em 2003, do Departamento de Popularização e Difusão da Ciência e Tecnologia, no âmbito da Secretaria de Ciência e Tecnologia para a Inclusão Social no Ministério da Ciência, Tecnologia e Inovação (MCTI). Esse departamento é responsável por coordenar a Semana Nacional de Ciência e Tecnologia, que permite uma mobilização ampla e diversificada em todo o país em prol da divulgação da ciência, além de realizar outras ações de apoio aos museus e centros de ciência e tecnologia, às olimpíadas de ciência e matemática e às feiras de ciência. Como parte desse movimento no âmbito do MCTI, foram criados editais específicos para a área de divulgação científica, por meio de suas agências de fomento: o Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), inclusive com a criação de um comitê assessor para a área, e a Financiadora de Estudos e Projetos/Finep. Outras agências estatais também criaram linhas de fomento específicos para a área. Refletindo a valorização da área no Brasil, em 2012, o CNPq criou uma seção específica para registro das atividades de divulgação científica no chamado currículo Lattes, um currículo que todo pesquisador brasileiro deve preencher para obter recursos desse órgão de fomento e de outras fontes do governo, que está disponível ao público em lattes.cnpq.br. Em maio de 2010, foi realizada em Brasília a 4ª Conferência Nacional de Ciência, Tecnologia e Inovação para o Desenvolvimento Sustentável (4ª CNCTI) que discutiu uma política de Estado para ciência, tecnologia e inovação (C,T&I) para o país com vistas ao desenvolvimento sustentável. Entre as propostas abordadas nessa conferência estão aquelas voltadas para a formação permanente dos indivíduos e aumento do interesse coletivo pela C,T&I. Uma delas é a de “promover a expansão, aprimoramento e integração em rede dos espaços científico-culturais com uma distribuição regional menos desigual e a promoção de atividades de ciência itinerante”.

* extracted from Massarani L. y Carletti C. (2013)

CHILE*

Chile's democratic culture has improved over the years. The social movements that emerged since 2007 in secondary and college education contributed to the creation of a more self-questioning and critical society, this reality is being boosted today from the government of President Michelle Bachelet through an educational reform that not only is heading toward gratuity, but also quality. In this context, where student's movement paved the way for others movements, we are facing a society that is increasingly demanding transparency and explanations about the way their institutions act. This is scenario that faces science and technology popularization in Chile, which has been boosted since 1995 by EXPLORA, a program from the *National Commission* for Scientific and Technological Research, CONICYT, whose mission is to contribute to the creation of a scientific and technological culture en the community, especially at a student's level, through actions of non-formal education, that aims to develop the capacity of the public to appropriate themselves from the benefits of these areas. This program has two lines of action, valuation and dissemination of science, the first one aims to a more systematic work, the second is driven especially to young students and general public. The program celebrates each year, in October, the Science and technology national week. One of the flagship activities of this week of science celebration is "1000 scientists, 1000 classrooms", an invitation to the academic world to leave their laboratories for a while and go to the children's classrooms to enchant them with science, but also with their personal experiences that leaded them down this path. One of the objectives of EXPLORA is to develop actions that will enhance communication between the scientific and technological community and the educational community, because we want, on the one hand, that scientists get to know people's needs and, on the other, for students and general public to appropriate themselves of the benefits of science by meeting their actors, having the opportunity to access their knowledge and experience.

For that reason, EXPLORA finances scientific initiatives aimed to be developed at schools or to do massive activities through the “National Fund of Valuation and Popularization of Science and Technology Projects”. Currently there are 30 projects financed in several regions of Chile. Investigators also participate supporting the “School’s Research Clubs”, which are boosted in every region of the country by EXPLORA’s partners, the same happens with the “School Congress on Science and Technology”. CONICYT is aware of the importance of public communication of science and the scientist’s role in this task, therefore since 2013, doctoral students who are benefited with scholarships from the institution will have to return the favor working on some of EXPLORA’s or their partner’s actions, specifically in popularization of science. They will not be alone in this task, because day after day, there are more institutions that realize of how important it is to ensure the access to scientific knowledge, and to the hopes, questions and debates that come with it.

*Alejandra Vidales Carmona, EXPLORA Program Director , CONICYT, Chile

MEXICO*

At the beginning of each presidential period, the Mexican government publishes a National Plan for Development (NPD), which establishes the route that the country will follow. The NPD 2013-2018 proposes an increase of the investment in science, technology and innovation. The challenge is to transit to a society of knowledge in a sustainable way. One of its lines of action specifically indicates the importance of the public communication of science and technology. Its objectives are to contribute to the public understanding of science as a cultural endeavor and to have an economical impact fostering innovation based on research. The science communication activities must be designed for each public covering different ages, different educational levels and considering cultural diversity. In Mexico the National Council of Science and Technology (CONACyT) is the head of the science and technology sector and the federal agency for science, technology and innovation. CONACyT is in charge of writing the Special Plan of Science, Technology and Innovation (PECITI), which must be in accordance with the NPD. This program includes the importance of science popularization as a very important strategy to use knowledge to democratize society. From a legal point of view, CONACyT was created in 1970 by the law of science and technology. This law has been modified this year to include in its article number 2 that CONACyT should undertake actions to promote and strengthen science dissemination among researchers of the country and social organizations. It also states the need to link with the educational system to increase scientific literacy. CONACyT is developing a national strategy of science communication. However, it is important to stress that it has organized since its creation very important science popularization activities. As an example, CONACyT publishes "*Ciencia y desarrollo*" one of the first Mexican science communication journals and organizes at a national level the annual "Science and technology week" that this year will be celebrating its 21st anniversary. Recently CONACyT has introduced two new actions: a call for science communication projects and a catalogue for science communication magazines. As a funding agency, CONACyT has supported projects for most of the Mexican science centers and it strongly promotes the transfer of knowledge generated by scientific research to society. *Julia Tagüeña, Associate Director of CONACyT, México

URUGUAY*

Un aspecto clave del Uruguay Productivo es la imprescindible búsqueda de que la innovación y la creatividad se instalen en los hábitos de la población, transformándose en parte de la cultura. En ese sentido, la incorporación de la enseñanza de la ciencia, la tecnología y la innovación en el sistema educativo, sea formal, no formal o informal, es un aspecto clave para la promoción de un **cambio cultural**, de una transformación de las actitudes sociales y culturales hacia la innovación (.....). Desde el 2006, la Dirección de Innovación, Ciencia y Tecnología para el Desarrollo (DICYT) ha fortalecido las acciones vinculadas a la educación científica, realizándose la Feria Nacional de Clubes de Ciencia y sus actividades departamentales preparatorias, con la participación de miles de niños, adolescentes y jóvenes, quienes presentan sus proyectos e investigaciones a sus pares y a la comunidad. Además, se organiza, junto a otras instituciones, la Semana de la Ciencia y la Tecnología. Asimismo, se han impulsado otras acciones tales como Campamentos científicos, Muestras de Clubes de Ciencia de Primera Edad y Educación Inicial, Proyecto MPadrinos, Concursos temáticos, entre otras. En el 2007, la DICYT se propuso dar un salto cualitativo impulsando la creación del *Programa de Popularización de la Cultura Científica*, en un escenario social en el que el conocimiento, en particular el científico y tecnológico se ha constituido en el eje central de la dinámica productiva.(.....). No obstante, resulta clara la tensión en las políticas que hacen a la difusión y popularización de la ciencia y la tecnología: por una parte el Programa debe cumplir ciertos propósitos “universalistas”, llegar a todo el país, con igualdad de oportunidades y garantizando la igualdad de género; con posibilidad de desarrollo de las diversas actividades realizadas, y por otra, atender las fuertes demandas “particularistas” de los medios de producción cada vez más tecnificados orientados a una mayor selectividad y diferenciación. (.....).En el año 2010 el Gobierno uruguayo estableció una política nacional en ciencia, tecnología e innovación, explicitada en el Plan Estratégico Nacional de Ciencia, Tecnología e Innovación. En el Objetivo 3 particularmente se propone Desarrollar capacidades y oportunidades para la apropiación social del conocimiento y la innovación inclusiva.

Sub Objetivo 3.1. Generar y aplicar conocimientos para la resolución de problemas sociales y la inclusión social. Sub Objetivo 3.2. Divulgar los avances científico-tecnológico en términos que los hagan comprensibles para el conjunto de los ciudadanos y favorecer la apropiación social del conocimiento.

Sub Objetivo 3.3. Fomentar el espíritu científico, tecnológico y emprendedor de niños y jóvenes a través de programas de popularización de la ciencia y tecnología.

A través de la Agencia Nacional de Innovación e Investigación existe una línea anual de Fondos Concursables a propuestas vinculadas a la popularización de la cultura científica, acompañando así la política de estado mencionada. En el año 2013 las actividades de cultura científica impactaron en más de 120 localidades, evidenciando una fuerte descentralización, y en más de 94.250 personas. En este año la DICYT crea el Área de Investigación y Educación Científica que tiene como objetivo promover y fomentar la investigación y educación científica a través del Departamento de Cultura Científica, del Museo de Historia Natural, del Observatorio Astronómico Los Molinos y del Museo Antropológico. Asimismo, Cultura Científica viene afianzando vínculos a nivel internacional los que permiten potenciar y favorecer nuevos escenarios para que niños y jóvenes puedan interactuar con sus pares de otros países, así como fomentar objetivos y estrategias comunes. Son algunos de estos: RedPOP, Convenio Andrés Bello, Sociedad para la Ciencia y la Cultura, Movimiento Internacional para la Recreación de los Jóvenes, entre otros.

*Gustavo Riestra, Ministry of Education and Culture, Department of Innovation, Science and Technology for Development, DICYT, Uruguay

Reference List

As a central tool for the study the UNESCO SPIN (<http://spin.unesco.org.uy/>) platform has been used, where are contained all mentioned STI National Plans, STI legal framework, STI policies and mechanisms carried out by the countries focused on developing a scientific culture.

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