

International
Journal of
**Human
Sciences
Research**

**REGIONAL SCHOOL
INTERNSHIPS, PARES
CODE: EM_O_HUERTA**

Iván Huerta Pizarro

Sebastián Gallardo Díaz

Cristian López Jamett

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



The “Regional School Internships, PaREs 2020” is an initiative of the “Science, Technology and Society” (C-TyS) team of the Vice-Rector for Innovation, Research and Graduate Studies of the University of Antofagasta, a group of professionals with more than ten years of experience in the development of initiatives and products for the dissemination, assessment and dissemination of scientific and technological knowledge.

The activity was one of the awarded projects (PAEI 02-115382) in the Contest “Environmental Support Program for Entrepreneurship and Innovation” (PAEI - R) 2019 of the Production Development Corporation (CORFO) of Chile, an organization dependent on the Ministry of Economy, which supports entrepreneurship, innovation and competitiveness, also strengthening human capital and technological capabilities.

OBJECTIVES

The main objective was the promotion of scientific and technological knowledge, as a motor of development, innovation and entrepreneurship, in the school community of the Antofagasta region, located in the north of Chile; through an internship program with delegations of students and professors.

This area of the country has a great capacity for scientific and technological knowledge. However, the dissemination and appreciation of this work, and the promotion of an innovative culture in the educational community, is geographically limited to the regional capital, Antofagasta.

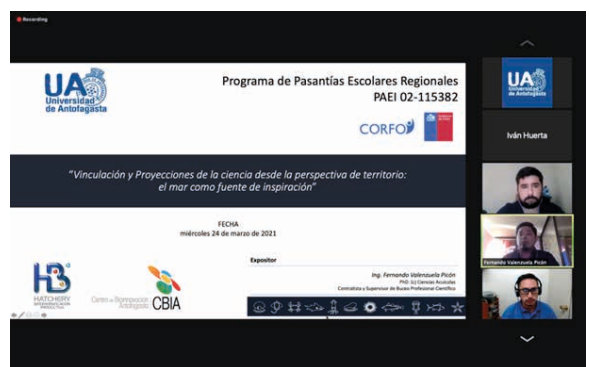
Considering the importance of developing scientific competencies in basic and secondary education, due to its impacts on citizen life (Veloza and Hernández, 2018) and the importance that culture and context have within this learning (Melo-Brito, N. 2017), the purpose of this initiative was to extend

the opportunities for students from the nine communes that make up the Antofagasta region to access scientific and technological experiences, in their areas of origin and with the accompaniment of outstanding regional scientists, promoting science and technology as a vehicle for development, innovation and entrepreneurship in school communities.

METHODOLOGY

The Internships began with a call to apply to enroll in “PaRES 2020” to the various educational establishments of the nine communes of the Antofagasta Region. Contemplating the motivation, training and accompaniment of students and teachers with project ideas that can be executed.

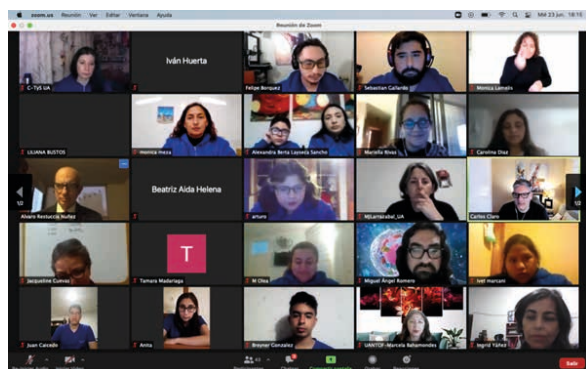
A series of trainings were developed with the selected delegations, in which the participants had different theoretical and practical activities, dictated by professionals, academics or researchers from the University of Antofagasta. Each student delegation chose a specific theme or area for their project. They were followed up once the training was completed.





Captures Training for beneficiary students and professors.

To end with an exhibition of works, where the students presented their research. With the realization of this activity, it was sought to promote attitudes of innovation and entrepreneurship in the execution of scientific and technological school projects applied to regional priority areas with potential business application.



Captures Exhibition of Works

Six were the participating delegations (composed of 25 elementary and middle

school students and 7 teachers) from educational establishments in Antofagasta, Calama, Tocopilla and Caspana. Their work was supported by seven scientific advisors from the University of Antofagasta.

However, its execution suffered the ravages of the emergency caused by COVID-19, and it had to first suspend its execution for the year 2020 and then adapt its programming, contents, methodologies and activities towards the virtual modality.

The execution of the “Regional Internships, PaREs 202” was structured into seven work stages, with 22 activities that took place between the months of October 2019 to June 2020. Then came a 7-month suspension (July 2020 to January 2021), to complete the work plan from February to July 2021.

GENERATED PROJECTS

Renewable energies, care for the environment, nutrition, among others, were the topics addressed by the delegations of Caspana, Calama, Antofagasta and Tocopilla. Looking at the different needs of their environment and their communities.

The works were the following: “Alternative energies in public spaces” (Republic of Greece School in Calama); “Bioremediation” (Liceo Domingo Latrile de Tocopilla); “Formation of compost” (Escuelita libre y feliz Aliwen de Antofagasta); “Pollution and health” (José Lancaster School in Antofagasta); “Caspana and its nopal, as an unconventional energy source for the future” (Nuestra Señora de la Candelaria de Caspana School); and “Green and happy gardens from my house” (Claudio Arrau School in Calama).

Proyecto

Energías Alternativas en Espacios Públicos

La ciudad de Calama, ubicada en uno de los lugares del mundo con mayor incidencia solar, ofrece oportunidades únicas y excepcionales para el uso de la energía derivada del sol.

Ante la dificultad en el acceso a la electricidad, por parte de familias que viven en algunas zonas apartadas de esta ciudad, y el equipo de trabajo se planteó la posibilidad de aprovechar el potencial de las energías limpias para estas personas del entorno de su comunidad educativa.

Para ello, se diseñó con la asesoría correspondiente, un panel fotovoltaico mono cristalino con forma de girasol, que funcionará de día y sin usar baterías para reducir los costos de fabricación. Con el panel se pretende cargar celulares, tablets y notebooks para estudiantes y otros miembros de la comunidad del establecimiento educacional.

Profesora encargada: Lidia Bustos Estudiantes: Tatiana Carrizo Alondra Vera Lidia Bustos	Asesora Científica: Dra. Ingrid Jaramilla Comuna: Calama Establecimiento Educativo: Escuela Municipal de Calama
---	---



Proyecto

Biorremediación

La contaminación del borde costero, específicamente de la playa "El Salitre", de Tocopilla es una situación crítica que ha preocupado a autoridades y la población en general, a lo largo de varias décadas.

El equipo de trabajo estudió las causas y el tipo de contaminación de este sector, para proponer una forma eficiente y eficaz de descontaminación. Determinando que la biorremediación, que es el uso de organismos vivos para eliminar o neutralizar agentes orgánicos o metales pesados, es una propuesta remedial efectiva.

A través del alga "Huiro canutillo" (*Macrocystis pyrifera*), la cual cumple con las características adecuadas para descontaminar esta playa. Debido a que es de bajo costo y alto rendimiento al cultivarse; tiene un gran tamaño que permite albergar otras especies y fomenta la biodiversidad del ecosistema; y fue utilizada de buena manera en otras zonas contaminadas del país.

Profesoras encargadas: María Graciela Olea Ingrid Yáñez Estudiantes: Sofía Dyazun Angie Moya Cristiane López	Asesora Científica: Dra. Mariela Rivas Comuna: Tocopilla Establecimiento Educativo: Liceo Domingo Latrille
--	--



Infographics “Alternative energies in public spaces” and “Bioremediation”

CONCLUSIONS

Despite the difficulties caused by the COVID-19 pandemic, it was possible to promote scientific and technological knowledge, as a motor for development, innovation and entrepreneurship. This, through an internship program that offered virtual training days with these guidelines; an accompaniment and follow-up with scientific advisors; and a virtual meeting that allowed the delegations to make their projects visible.

Scientific and technological contents were delivered to the students and professors in the training days; mainly in priority areas of the region. This according to the different projects carried out by the beneficiaries; which referred to issues such as renewable energy, care for the environment and healthy eating. Long-

standing scientific advisors supported work in these areas.

In the training sessions, entrepreneurship and innovation content was provided with workshops and presentations to the beneficiaries. In activities carried out by the Researcher of the Bioinnovation Center of the University of Antofagasta, Dr. (c) Fernando Valenzuela Picón; and Susana Rubilar Epuyao, lawyer and Deputy director of Technology Transfer and Entrepreneurship of the Transfer and Licensing Office (OTL) of the University of Antofagasta.

With the training sessions and the follow-up and accompaniment, the beneficiary students and professors acquired a series of tools to develop scientific and technological work. This was reflected in the presentations they made at the Virtual Meeting.

Four diffusion and dissemination products were generated, which compiled the works developed by the students. These products were: a catalog of projects, an infographic by work, a traveling graphic exhibition and a video summary of "PaREs 2020". These dissemination and dissemination products serve to make the work carried out visible to the public, be it the educational community or the general community.

It was possible to strengthen the motivation and commitment of both the beneficiary students and teachers, as well as the scientific advisors, to carry out research at the school level, assuming the challenge of working in this program, with all the difficulties caused by the COVID-19 pandemic. 19, from their homes and virtually.

Six works were carried out that started looking at the different needs of their environment, developing innovative proposals. Six proposals that can be projected, as a basis for the development of future research in the near future, with the support of public and/or private institutions.

From the impact evaluation carried out during the process, it was observed that within the main learning that teachers and students declare to obtain, learning to carry out associative science, distributing tasks in order to achieve a common objective and the use of technology for the benefit of group work.

REFERENCES:

Melo-Brito, N. (2017). Los puentes en la enseñanza de las ciencias: un compromiso para comprender las investigaciones sobre las relaciones entre conocimientos científicos escolares y conocimientos ecológicos tradicionales. *Revista de Facultad de Ciencia y Tecnología*, nº42, ISSN 0121-3814, pp. 43-61.

Veloza, R; Hernández, C. (2018). Valoración de las estrategias adoptadas por docentes en la enseñanza de la ciencia desde la perspectiva de los estudiantes de educación básica. *Ánfora*, vol. 25, nº45, ISSN 0121-6538; 2248-6941, pp. 42-57.

More information: <https://pares.ctysua.cl/>