Growing crystals: Teacher support in the use of science labs

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INTRODUCTION
The limited presence of the natural sciences in school, and the non-systematic teaching of its contents, is part of a school tradition in many of the primary educational institutions. During 2015 Primary schools in the city of Bariloche received laboratory materials from the Natural Science for All Plan at the Elementary level. In most schools this material is not used. This is due, to a large extent, to some inertia and insecurity in teachers. Therefore, the Chemistry teacher training career of the University of Rio Negro (UNRN) created the program "Teacher support in the use of science laboratory in primary schools in the city of Bariloche"

1- Graduate students training
through their participation in a course on the topic of crystal growth, in cooperation with the Argentine Association of Crystallography

2- Experimental activities
were carried out on 18 classrooms in 11 elementary schools, and were attended by more than 400 students.

2- Experimental activities
Experimental crystal growth activities performed with: sugar crystals (in brochette sticks: sugar sticks)

Experimental crystal growth activities performed with: borax (egg shell simulating geodes)

Experimental crystal growth activities performed with: copper sulphate or alum (figures in pipe wires)

Experimental crystal growth activities performed with: salt (columns of salt)

3- Observation and result analysis
Student participation was focused on the promotion of scientific procedures and competences such as:
- hypothesis formulation, experimental design and variable identification and control,
- systematic observation,
- data recording and conclusion extraction and modeling.

The implementation of all these procedures with elementary students were feasible with the help of the teacher and, in this case, the UNRN students.

4- Conclusions
Although the demand that gives rise to this program is very broad, and exceeds its possibilities, a step has been taken in the right way. The interest and participation in experimental activities and in the use of the laboratory, both of teachers and students of elementary school, and in several cases of the school management team have been encouraged. From the primary teacher appraisal of the experience an increased confidence and knowledge appear as learning asset, encouraging teachers to continue applying lab activities in their usual practice.