

## Parallel Session 21: Science week: evaluating experiences

### COMMUNICATING SCIENCE TO SCHOLARS THROUGH ACTIVE PARTICIPATION

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#### Abstract

Based on the experience of the authors in organizing activities for the Catalan scholars within the framework of the Catalan Science Week, the key factors in communicating science to scholars are presented. With the aim at fostering the interest of children in science and also at communicating basic scientific knowledge, two main events have been organized recently: earthquake and sound intensity measurements. Taking into consideration that a science event follows the scheme of a communication process, the key factors presented are classified into four categories: origin, message, channel and target audience.

**Key words:** Science for scholars, earthquake, sound measurement, key factors

#### Text

Within the framework of the Catalan Science Week, the Catalan Research Foundation (FCR) and the Departament d'Ensenyament of the Generalitat de Catalunya (DE-GC) together with other institutions such as the Institut d'Estudis Catalans (IEC), organize annually a science event aimed at fostering the interest of Catalan scholars in science and at communicating to them basic science knowledge. Recently, two main activities have been designed, planned and managed regarding earthquakes and the measurement of sound intensity.

*Salta per la Ciència!* (Jump for science!) was organized in order to communicate the students the basic knowledge about earthquakes, its origin, measurement and effects. The participating schools prepared its own hand-made seismographs using simple materials. The activity consisted in a simultaneous jump of all the participating scholars that could be recorded in the school seismograph and supposedly in the different official seismographs located in different parts of Catalonia. Although positive data recording is not the main objective, scholars were taught on the basic knowledge about plate tectonics, Richter and Mercalli scales, transmission of vibrations through the earth, effects of earthquakes, and so on.

The second large activity was related to the measurement of sound intensity. *Crida per la Ciència!* (Shout for Science!) consisted in gathering the participating scholars in their playground and let them shout at the same time. Sound intensity was recorded in the microphone of a PC and the data was sent to an Internet server that collected all data of the schools, made an average of counties (*comarques*) all over Catalonia and displayed them in a web page in a

map of colors depending on the intensity. Some other issues such as sound pollution (excess of music, noise in a city by vehicles, etc.), physics of sound transmission and effects of sound on the human body were incorporated as subject of the activity.

The key success factors of a science communicating activity designed for scholars were derived from the analysis of the two experiences. Taking into consideration that such activity could be considered as a communication event we have classified such factors following the scheme: (i) origin of the communication, (ii) message to transmit, (iii) channel of communication, and (iv) target audience. The origin of the communication event is based on the objectives of the organizing institutions and in the general aim of the Science week. Also a secondary issue has to be considered as it is the lack of interest in young students for scientific disciplines (in schools and later in universities) and the low proportion of scientists and researchers in the workforce. The core competencies of both institutions are science (for FCR and IEC) and schools (for DE-GC) and the synergies and complementarities of both scopes have shown great potential.

The message to transmit has to be related to the life of the students and be attractive enough to drag their interest towards the activity. Social interest is crucial. Sound and noise effects in an urban metropolis such as Barcelona are everyday issues. Sound can be measured and treated scientifically. Earthquakes are not frequent, but their impact in the media is high when they happen. Knowledge about the natural forces that drive such important phenomena can send the message that everything (in the material world) has a cause and an effect. An essential factor, regarding the message, is that its content should be part of the scholar curriculum of the student. The subject must be part of any of the disciplines during the course. This helps a lot in defining the subject and relating the information to the normal functioning of the school.

The channel is in this case the same school. Normally, in order to assure as much participation as possible the playground is the best place to conduct any activity. Time and place of the activity have to be compatible with the normal development of a school day. The materials used have to be cheap and easily available. Supporting printed material is necessary to give the basic concepts in which the activity is based. Complementary information on the Internet and other activities using web technology are recommended. Teachers play a crucial role in the process. Probably they are the most important key factor in transmitting the message to their pupils. Previous working sessions to give them information and tricks for performing the activity are highly advisable.

The target audience of course is the students. Different categories could be established depending on the age and the activity itself. Primary and secondary schools may have very different operational strategies due to the expected response by the children. The activity should be programmed to foster their active participation. An indirect target audience is the mass media. Such activities with scholars are highly appreciated by the press and proper documentation (press kit) and layout should be taken into account.

Among all science events, those involving kids are the more rewardable and interesting. Not just because the effect of such activity could be determinant in

the future scientific careers of the kids, but because their amplifying effect towards their families, relatives and friends opens up widely the public reached by the activity.

