"Ciência p’ra que te Quero": Making Science Accessible and Exciting to Young People
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Abstract. In the last two decades science has delivered dramatic results relevant to health, survival and lifestyle. In many cases the pace of scientific change has accelerated beyond what the public can keep up with, fully understand and accept. Many people find scientific ideas difficult to apprehend - or simply do not see why they are important and how great their impacts are. For this reason, science communication is becoming an increasingly bigger and important area.

Experiment@Ciência is a science outreaching project designed and implemented by maths and biology professors/ researchers of the School of Sciences (ECUM) of the Universidade do Minho, Braga, Portugal. This project has as main goal the development of different scientific and experimental interdisciplinary activities for public of different ages, trying to make science part of everyday life, bridging the gap between science and society and making science accessible and exciting to young people and non-scientists.

This communication is devoted to “Ciência p’ra que te quero”, one of the intervention fields of the Experiment@Ciência project, which consists of a set of experimental lab hands-on activities designed for children between 6 and 10 years old. These activities are planned and implemented in a partnership with a group association of undergraduate students enrolled in the degree of Applied Biology (AB) at Universidade do Minho – the "Núcleo de Estudantes de Biologia Aplicada da Universidade do Minho" (NEBAUM) and the library “Biblioteca Lúcio Craveiro da Silva” (BLCS), in Braga.

The mission of “Biblioteca Lúcio Craveiro da Silva” is to promote books, reading, facilitating the access to information and knowledge to the surrounding community. BLCS encourages
sharing of information and knowledge through cultural actions, promoting citizenship. The Library is committed with the development of actions that enhance information and scientific literacies, since it considers that learning science informally, concurrently researching information in books and on the Web are mandatory basic skills for all the citizens of today’s world.

NEBAUM, the biology students´ association of Universidade do Minho, who accepted the invitation of Experiment@Ciência to collaborate in “Ciência p’ra que te quero” as science communicating agents has, among others the goal of "promoting and collaborating in cultural and recreational actions related to the academic life." Strategically, NEBAUM develops experimental activities for younger audiences, in order to present the degree in Applied Biology. Every 3rd Saturday mornings of each month, a different activity is organized at BLCS, allowing children to be in contact with different scientific interdisciplinary hands-on activities, and let them try to be scientists for two hours. The undergraduate students from NEBAUM have a special job as monitors supervising each of the different tasks that take place during the activity. At this moment, five activities were carried out about different subjects - (1) heart, (2) water, (3) green world, (4) growth of living beings and a (5) safe summer – but four more activities are already scheduled until the end of the year. Several questions were tried to be answered during such activities that include different lab tasks:

(1) Beat beat heart - Do you want to learn more about your heart? And to know why and how this muscle beats? And learn how to build a graphic in a special paper, showing the rhythm of your heart when you're quiet or running?

(2) H₂O: water for life - Do you know in how many states can you find it on Earth? And how much water is available for life? How much water is there in your body? And how many liters do you waste daily? Have you heard about the water footprint? Do you want to learn how to calculate yours?

(3) Green: mandatory to respect - Where does the green of the plants come from? And why they change their colour? Do they breathe and have "noses"? And ... do you know what fractals are? Do you want to find them in nature? Do you want to make one?
(4) Growth and multiply - Your body grows and so do other animals and plants. What means “growing”? Only living things grow? And our body grows respecting proportions? Would you want to measure and verify them? Some cells die and others born. Do they multiply? How long does a cell take to double? Is this double time the same in microbes, plants and animals? How trees and bushes arise? How do fruits arise from flowers?

(5) Summer (with) science - Summer has arrived!... Have you already observed that your sweat is more abundant and frequent? Do you know why? Is it helpful to your body? It’s beach time. Do you know how should you protect yourself? Do you want to design a beach towel with regular polygons?

The choice of the suggested tasks and activities was based on a set of criteria including the inclusion (or not!) of the themes in the 1st level of school national curricula, as well as the possibility that such subjects could be addressed with varying degrees of depth, depending on the grade and level of cognitive development of children.

To evaluate the project two kinds of surveys were taken in each activity: (a) for the children (b) and for the AB-monitors. Results obtained show not only the greater involvement of AB-monitors and children but also, and perhaps the main result, that the hands-on science learning activities can enhance children’s learning effectiveness in scientific thinking and attitudes and promote science education and scientific literacy.

The present work will present the project “Ciência p’ra que te quero”, the different activities promoted and some of the results of its implementation. With these activities we want to make science more attractive to young people and to increase society's appetite for scientific information and innovation, simultaneously gathering ideas to implement further research and innovation activities. At the same time, this kind of activities aim to answer some of the societal challenges tackled by Horizon 2020, building capacities and developing innovative ways of connecting science to society and vice versa.