

## Ciência na Ponta dos Dedos: Scientific Activities for Children under 10

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**Abstract.** In the context of the “Projeto” of the 3<sup>rd</sup> year of “Licenciatura em Biologia Aplicada” it was proposed to develop experimental activities connected with science for 1<sup>st</sup> to 4<sup>th</sup> grade students. This initiative was named Ciência na Ponta dos Dedos and was presented in the scope of “Festa da Ciência 2014”, an event of the Escola de Ciências of Universidade do Minho, which happens every year during May (and lasted this year from 12<sup>th</sup> to 14<sup>th</sup> of May).

The first edition of Ciência na Ponta dos Dedos was offered to 1<sup>st</sup> grade students (6-7 years old). A mini laboratory where children could see, try and participate in scientific hands-on activities was created for the initiative. The experimental activities were designed and settled in accordance with curricular guidelines, age [1,2,3] and in the scope of the theme “water source of life” through the development of six different activities where the children, organized in groups, had the opportunity to explore aspects connected with the (i) reaction of an acid with sodium bicarbonate in water, (ii) dissolution of different substances in water,

(iii) permeability of different soils, (iv) water cycle through the observation of a mini ecosystem, (v) observation on the microscope of the stoma of the plants and (vi) the colouring of carnations by capillarity using several dyes.

These activities were carried out in such an environment that kids’ eyes had light up as brightly when doing the science lab activities Children could feel free to express their ideas and participate in the activities to build applicable knowledge in the context of experimental science. This kind of learning comes easier to children if they can touch and make the experiments by themselves, though with a proper supervision, allowing the children to think and to learn that “if I do this, that will happen”, so “in order that to happen, I will have to make this” [2].

In the sequence of these experimental activities, children were asked to fill in an inquiry, previously prepared in order to know their opinion about the activities they performed, including their favourite ones. This survey will also provide some new ideas to improve future similar events.

The present communication intends to present the project and its success near the children and their teachers, as well as to highlight the importance of scientific knowledge. Quoting some children: *“the activities were very funny and I learned new things”, “I learned why oil does not mix with water”* and *“I learned that the noses of the plants are in their leaves”*.

In a developing society it is more and more important that the education system makes science stand out from the early years of school in order to form citizens able to deal efficiently with the challenges and the necessities of the current society [2].

**Keywords.** Children, experimental activities, hands-on science.

### References

[1] Ministério da Educação – Departamento de Educação Básica, Organização Escolar e Programa de Estudo do Meio - 1º Ciclo; 2004.

[2] Martins IP, Tenreiro-Vieira C, Rodrigues AV, Veiga ML, Teixeira F, Vieira RM, Pereira SJ, Couceiro F. Despertar para a Ciência: Actividades dos 3 aos 6. M. da E. – DGIDC, Ed.; 2009. p. 11-12

[3] Providência C., et al. Ciência a Brincar, Lisboa: Editorial Bizâncio; 1999-2007.