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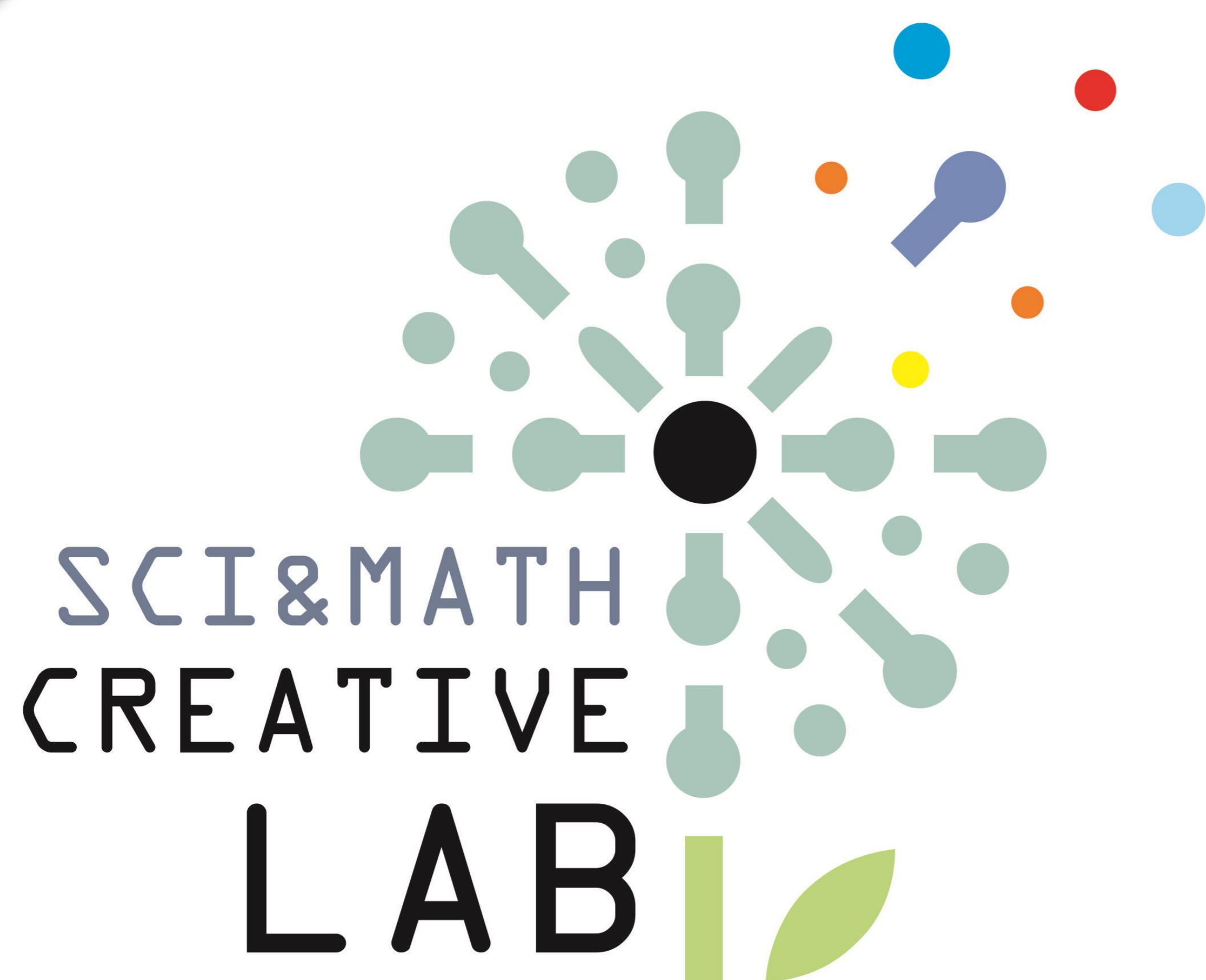
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*The mind that opens to a new idea  
 never returns to its original size.*

Albert Einstein



## TEACHING NEW WAYS OF LEARNING SCIENCE & MATHEMATICS

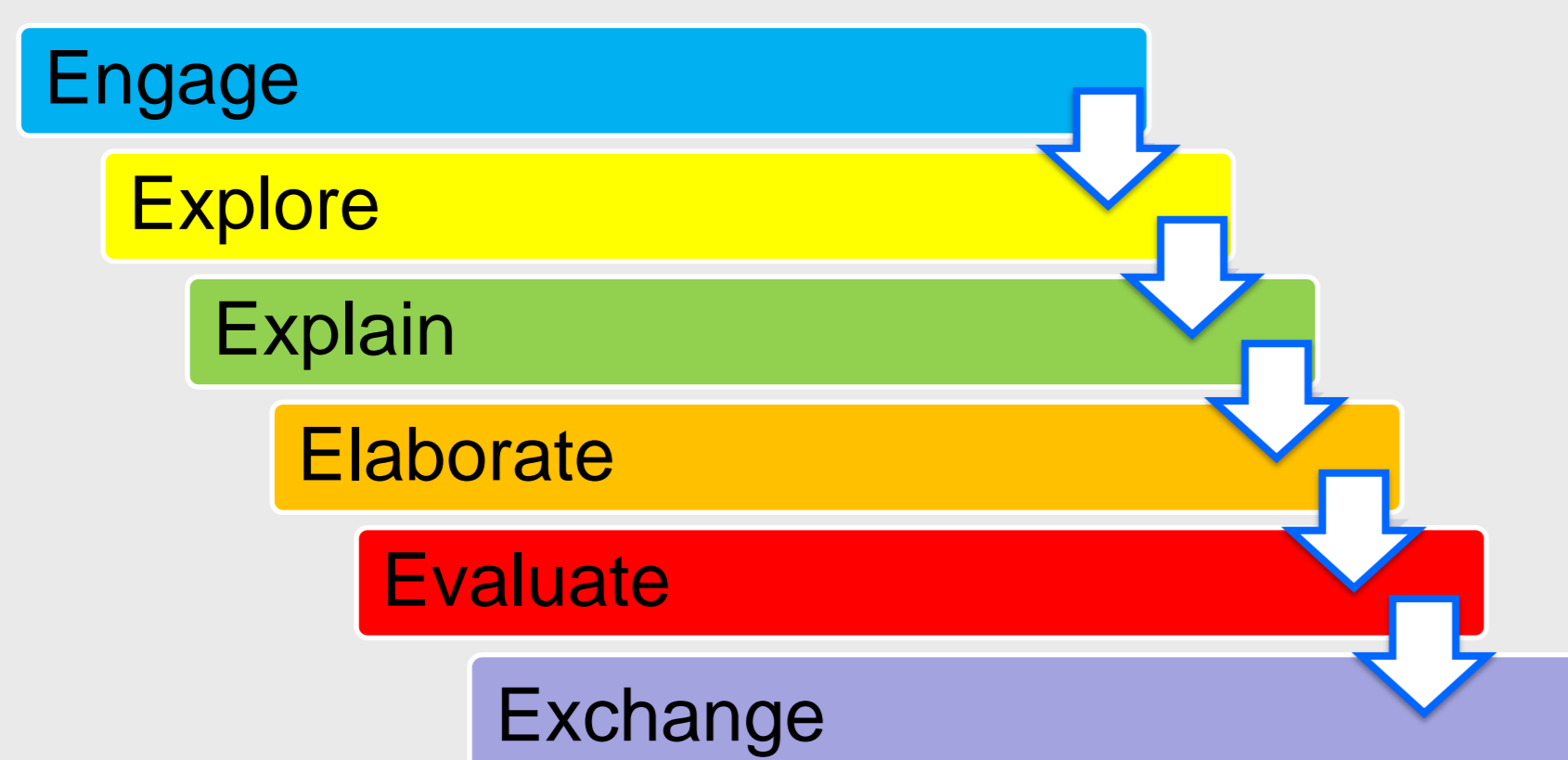
### What is the CreativeLab\_Sci&Math?

It is a didactic initiative of the teachers of the Department of Mathematical and Natural Sciences of the Polytechnic Institute of Santarém/Higher School of Education (IPS/ESE). We are aware of the evolution and importance of educating future educators in teaching practices associated with new learning environments. So, we had developed an initiative to transform traditional labs into innovative educational environments (IEE) called **Creative Lab\_Sci&Math**.

The CreativeLab\_Sci&Math is based on the following principles:

- **Use of the 6E instructional model and Inquiry-Based Learning.**

The 6E model includes the following moments (BSCS, 2006; Kähkönen, 2016):



- **Promotion of interdisciplinary activities in Mathematics and Sciences.**

It implies the accomplishment of activities with the intention of developing diverse skills in the students, through their involvement in tasks that relate contents and processes of mathematics, chemistry, physics and natural sciences.

- **Use of innovative educational environments.**

The Creative Lab\_Sci&Math is organized into different spaces that relate to 6E teaching moments and to the different learning styles of the students. These spaces, inspired by the initiative *Future Classroom Lab* (European Schoolnet, 2017), correspond to different learning areas that aim at the development of different skills. An IEE implies, thus, to rethink the spatial organization of the 21st century classroom, its resources, the teaching strategies, and the role of the teacher and the student.

- **Curricular integration of digital technologies.**

In the Creative Lab\_Sci&Math we implement activities that provide opportunities for students to explore and manipulate digital tools in a contextualized way (Llabaca, 2003), with the aim of building knowledge (Costa, 2012). The digital educational resources propose, for example, to combine real experimentation with virtual experimentation, through interactive simulations (Zacharia, 2005). Activities of initiation to programming, promoters of digital literacy, of computational knowledge and the integration of knowledge of different curricular areas (DGE, 2016; Partnership for 21st Century Learning, 2007), have also been promoted in these IEE.

### CreativeLab\_Sci&Math – Digital Educational Resources

**Tectónica de Placas (CreativeLab)**  
 Categoria: Geologia 12º ano  
 Tipo de recurso: Documento de texto  
 N.º de downloads: 253  
 Classificação dos utilizadores: 1 voto (clique para votar)

**Investigar um problema denso**  
 Categoria: Física 3º Ciclo  
 Tipo de recurso: PDF  
 N.º de downloads: 403  
 Classificação dos utilizadores: 14 votos (clique para votar)

**O que é o efeito de estufa**  
 Categoria: Introdução às Ciências 2º Ciclo  
 Tipo de recurso: Documento de texto  
 N.º de downloads: 1833  
 Classificação dos utilizadores: 7 votos (clique para votar)

**A refração da luz**  
 Categoria: Física 3º Ciclo  
 Tipo de recurso: Documento de texto  
 N.º de downloads: 89  
 Classificação dos utilizadores: 1 voto (clique para votar)

### References

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