

Foreword

Celebrating Science and Science Education

Reuniting a large and diverse membership of institutions from all over the EU, twenty years ago the Socrates/Comenius 3 Hands-on Science Network was established marking the beginning of a wonderful journey with an ever-increasing enthusiastic group of researchers, teachers, educators, students, parents, policy makers and many others all committed to the improvement of Science and Science Education. With a broad open understanding of the meaning and importance of Science to the development of our societies, each individual and of the humankind, the main goal of the Hands-on Science Network is the development improvement and generalization of science education and scientific literacy by an extended use of investigative hands-on experiments based active learning of Science and its applications, while fostering cooperation and mutual support understanding and respect among teachers, researchers, educators, students and all involved and committed to science education at all levels and contexts.

The focus of HSCI was not on the creation of new pedagogical or didactic theories or to remake, or simply rename, existing ones, well established or not... We do not need to *reinvent the wheel* but we do can improve it and give it a better use. Being aware of the evolution and changes in our societies, identifying and facing, in an open and critical mind way, the challenges, risks, new constraints but also opportunities, we welcome and give support to all positive contributions aiming a better effective science education.

At our 20th annual Hands-on Science conference in the beautiful city of Barcelona, that we are visiting for the second time after the HSCI2018 conference we fondly remember, we will celebrate *Science and Science Education* and the improvements and advances made along last twenty years. As always in a friendly and open-minded way we will discuss current trends challenges and opportunities respecting and integrating all different perspectives and diverse and innovative proposals of solution to the problems science education is facing.

Along these twenty years a large number of relevant and meaningful, pedagogically and scientifically, papers support materials and inspiring examples of good practices were presented at our conferences and published in the proceedings and books we edited, constituting a most valuable repository freely available to everyone.

The book herein aims to contribute to the improvement of Science Education in our schools and to an effective implementation of a sound widespread scientific literacy at all levels of society. Its chapters reunite the works presented at the 20th International Conference on Hands-on Science. Celebrating Science and Science Education, held in Barcelona, July 17 to 21, 2023.

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