



Chemical Education

A CHIMIA Column

Topics for Teaching: Chemistry in Nature

Inspiring Students to Explore Science Topics Since 2011

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Abstract: To succeed in Science on the Move, the nation-wide competition for Swiss high school classes, students are requested to work as a team on relevant research topics. The project shapes their notion of science as one of the foundations of our society and as a possible professional field for themselves.

Keywords: Class competition · Science education

The idea was born more than a decade ago: launching a project that would motivate entire high-school classes all over Switzerland to carry out research projects and present them in an attractive way to their peers and to a jury of experts from academia, education and industry. With the SimplyScience foundation in the organizational lead, the involvement of experts in science and education, and the generous financial support of Roche, the class competition Science on the Move (SOTM) took place for the first time in 2011 and then every other year. From the start, the tasks were designed in a way that they can only be tackled by a team; the entire class is involved, and every student contributes in a manner that suits their abilities best. Science on the Move is not about talent promotion. It is about encouraging young people to deal with scientific questions even if they may see their own future in a different professional field, it is about understanding the relevance of dedication and perseverance for good research, about communicating results to a wider audience, and it is, last

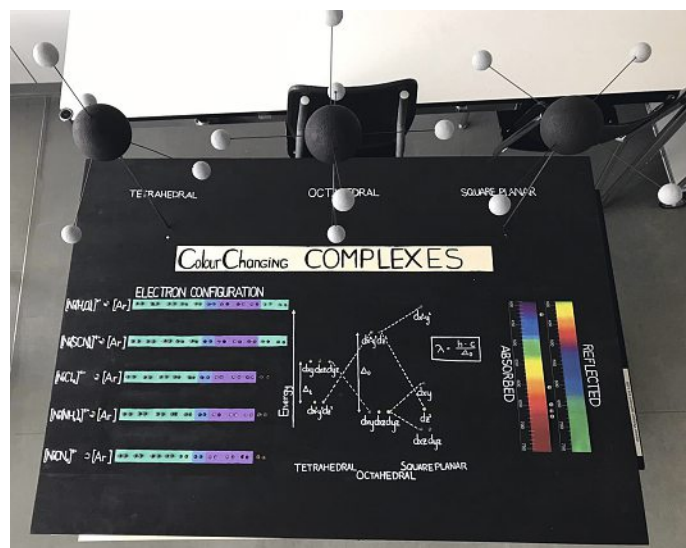


Fig. 2. "Understanding through models" was the keywords of the 2019 competition. The winning class had chosen colour-changing chemical complexes as their topic. Source: Alexander Kaeslin, F. Hoffmann-La Roche Ltd



Fig. 1. Memorable stage presentations have been an essential part of SOTM since the beginning, showing the creativity and motivation of the students. Source: Alexander Kaeslin, F. Hoffmann-La Roche Ltd

but not least, about motivating young people to work together for a common goal. Seven editions of SOTM later, we review how the competition evolved over the years and what impact it has had on some participants of the earliest editions.

The prizes for which the classes compete are attractive: a science week abroad for the winners, including travel, accommodation and a diverse program, and a generous contribution towards an educational trip in Switzerland for the other classes that have made it among the 10 finalists. These prizes spur the students on to invest a considerable amount of time, energy and creativity not only in the classroom, but also on free afternoons and sometimes weekends. "SOTM has strengthened our class spirit", Sebastián says, who took part with his class in 2011 and is now a teacher in biology and natural sciences himself. Simona, today a Senior Research Associate with Roche, also recalls the commitment of her teachers who facilitated the participation of her class in 2013: "Your dedicated support and encouragement during this exciting time has left a lasting impression on me, and the memories of this competition [...] are still vivid and meaningful to me today."

While the tasks of the first few editions were clearly outlined, introducing a biological or biochemical object of study and requesting the students to set up experiments and answer questions around these topics, later editions had the students develop a larger part of their task themselves. How can technology help us with food production in the face of dwindling resources? How can we meet the environmental, logistical and economical challenges associated with providing healthy and nourishing food to an increasing world population? No, these questions cannot be answered in the frame of a three-month high school project. But

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Fig. 3. Class OS2bic from Collège Sainte-Croix, winner of the SOTM competition 2023. Source: Alexander Kaeslin, F. Hoffmann-La Roche Ltd

the topic of SOTM 2023, “Beyond our Food”, made the students think about such questions and make the connection between individual technological approaches and a worldwide issue like sustainable agriculture. The classes were asked to delve into the topic of vertical farming; research the advantages and disadvantages of various plant growing methods and develop their own system for indoor biomass production. Specifically, the aim was to grow autotrophic organisms with artificial light and produce as much biomass as possible with minimal energy input.

Submissions for the first part of the competition included a video, a scientific poster, and a lab journal evaluating the success and efficiency of their chosen system. From the thirty projects, originating from 22 Swiss towns and cities, ten were selected to take part in the second round, where the classes had to present their experiences in a creative performance to an expert jury and the other classes. On every occasion, this final day has been a highlight of Science on the Move, showing students outgrowing themselves in their desire to deliver a unique and fun presentation while still bringing across sound scientific messages.

Since the inception of Science on the Move, more than 4300 students have taken part in this competition. We firmly believe that projects like this provide an invaluable opportunity for them to develop various skills in a broader context and gain an understanding of scientific work – and of the ways of making science accessible to others. As Sebastián puts it: “SOTM confirmed my interest in natural sciences, which certainly contributed to my own decision to study chemistry and later biology. Today, I teach science to 7–9th graders, and I try to do it in a practical way, including fun and games.”

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