



Real Sociedad Española de Química (Spanish Royal Society of Chemistry, RSEQ) Annual Report to the EuCheMS Division of Chemical Education for 2021-2022¹

1. Abstract

From July 2021 to June 2022, the teaching of chemistry in Spain, as in other countries, has been marked by the end of periods of confinement caused by the COVID19 pandemic. It has been an opportunity to promote, quite successful in general, blended learning and several online methodological approaches.

2. National educational policy

For decades, there has been some instability in Spain at the legislative level regarding education. We are currently immersed in the application (between 2022 and 2023) of an eighth general legislation for secondary education since democracy began in 1977. In turn, the practical application of educational laws falls to the 17 autonomous governments (in which aspects such as education and health are transferred completely), so that in our field, the number of hours dedicated to chemistry is unequal. The heterogeneity of Spain is very large: there are co-official languages in 6 of the 17 autonomous communities, there are large areas with a low population very disseminated, cities with a large population and neighborhoods with very unequal economies and proportions of immigrants.

Among the novelties of the new educational legislation, learning by areas is included, and specifically STEM education and competences is mentioned for the first time. In this way, teaching by areas of knowledge and by practical work is promoted. This change, which is controversial (as always in education), will be implemented over two academic years and encourages, in a way, educational innovation in line with what has been proposed for years in modern chemistry teaching (contextualized learning, teamwork, real examples applied to everyday life...).

At the secondary level, in general, there are few laboratory sessions, depending heavily on the school and the teachers involved.

Regarding the teaching of chemistry, at the University level the standards of the European Higher Education Area are met.

¹July 2020 - June 2021, all levels of chemistry education: primary, secondary schools, universities, general and vocational education.

Among the most common problems at national level can be highlighted:

- Lack of job stability for teachers at different educational levels, who are sometimes in a different center each academic year. Legislation in this area, however, seems to point towards greater teacher stabilization.
- Concern about the amount of school failure and poor results in the successive PISA reports. When these reports are published, authorities and public opinion show the greatest interest in educational matters.

3. Events in chemical education

The RSEQ organized the *National Chemistry Olympics*. After the local phases, the final was developed, online (due to the pandemic), on May 2021 organized by the University of Santiago de Compostela (USC).

As it was pointed out in our previous annual reports, the confinement during the previous academic years, caused by the COVID19 pandemic, was an opportunity to promote online teaching: many teachers were fully involved in modern educational methodologies. During the confinement, primary and secondary education teachers and university lectures had been involved in the design and application of a wide range of online didactic tools, teaching strategies and evaluation methods. It should be pointed out that evaluation has been the most discussed issue by educators during the confinement and it is still has been matter of thought for the academic year 2021-2022. During this course, secondary and high school students have generally attended classrooms, with adequate social distance, use of masks, adequate ventilation, etc. According to the educational centers, activities were proposed to the students at home if they could not go to the classroom. Each University proceeded in a way, either completely at a distance or in a blended way.



4. Activities of the National Chemical Society

The “Didactics and History of Physics and Chemistry Specialized Group” (GEDH) is one of the few groups that are common to both the Spanish Royal Societies of Physics and Chemistry. In our case, it belongs to both societies due to the peculiarity of the Physics and Chemistry, who, as indicated before, are twofold. In turn, from the beginning it was considered that history and didactics are two highly intertwined areas.

The GEDH consists of 220 members, 150 from the RSEQ and 70 from the RSEF. Members of the group are professional scholars in science education and/or history of science in different educational levels, including University professors of the Master of Teacher Training (60 ECTS credits, one year long), a compulsory degree to work as a teacher in secondary education in Spain. The GEDH website was recently launched: <https://gedh.rseq.org/>

Perhaps the most emblematic action carried out by our specialized group of RSEQ was the organization of the «Awards to the innovation educational in Physics and Chemistry in times of pandemic», with the participation of teachers from all over Spain. The objectives were to highlight the exemplary task of teachers in a particularly unique historical stage, as well as to disseminate good practices for the future in face-to-face and blended teaching modalities. All this, in the context of the celebration of the 35th anniversary of the creation of the GEDH. Eight prizes were awarded, for works that contemplated various methodologies: gamification, flipped classroom, case-based learning, face-to-face and virtual experiments, *inter alia*. In November 2021, a specific symposium was held to award these prizes, as well as the «Salvador Senent» Award, with the name of the founder of this specialized group 35 years ago, for papers on the didactics or the history of physics or chemistry. It is a much-consolidated activity of the group, after which the publication of works on these issues in the two journals published by our societies (*Anales de Química* by the RSEQ, and *Revista Española de Física* by the RSEF). The awarded work was “En el Bicentenario de la fundación del Museo Nacional del Prado” by J. Pastor Villegas and J. F. Pastor Valle (<https://bit.ly/3w1AnSz>). During the symposium, various interventions on science education were also given, as can be seen at <https://bit.ly/3jiHVvj>

JORNADA SOBRE “DIDÁCTICA E HISTORIA DE LA FÍSICA Y LA QUÍMICA: ENFRENTANDO LOS RETOS DEL SIGLO XXI”

15 noviembre 2021 (modalidad telemática)

<https://bit.ly/3jiHVvj>

Grupo Especializado de Didáctica e Historia
de la Física y la Química



Real
Sociedad
Española de
Física



Real Sociedad Española de Química

GEDH (RSEF + RSEQ) | 1986 · 2021
35 AÑOS DIFUNDIENDO LA FÍSICA Y LA QUÍMICA



Other activities carried out by the RSEQ through the GEDH were:

- Collaboration in the preparation of the 7th International Conference of Science and Technology Teachers that was held on April, 2022. The information can be seen at: <https://bit.ly/3w0Hhr1>
- Collaboration in the 3th Contest of Fanzines: «What would the world be like without the work of scientists? » (<https://bit.ly/370MYMB>), convened by the University of Alcalá,
- Two workshop presentations at the international science festival «Ciencia en Acción», Science in Action (Viladecans, October 2021).
- A few lectures and seminars given for teachers and/or all the people.



- The GEDH has supported the online exhibition «Modesto Bargalló. Making science in classroom» organized by L. Moreno-Martínez on the 40th anniversary of the death of this illustrious Spanish science educator.

<https://modestobargallo.jimdofree.com/>

- Preparation of two issues of the Group Bulletin (December 2021 and June 2022), with the new name of 'Faraday: Boletín de Física y Química'. Previous issues of this "journal" can be seen at:

<https://gedh.rseq.org/boletin/>

- Organization of symposiums on didactics, history and outreach of Physics and Chemistry at biennial national meetings of RSEQ (Granada, June 2022) and RSEF (Murcia, July 2022), both with great participation and audience success

5. Publications

As members of the GEDH, and about different topics of chemical education and history, we have published among May 2021 and June 2022 near 20 papers.

6. International and European initiatives

A few members of the GEDH participate as:

- *Scientix Ambassadors*, in the European project *Scientix* (the community for science education in Europe, <http://www.scientix.eu/>).
- Participants (and members of the committee) in the festivals *Science on Stage* (<https://www.science-on-stage.eu/>).
- Translators from English into Spanish of papers that are published at the web of the journal *Science in Schools* (<https://www.scienceinschool.org/>).

7. Other events and activities

The GEDH is specially committed with social communication of science. Hence, we have created a Facebook group and a Twitter profile (@GDHFQ) in order to promote activities, resources and publications of interest for chemistry teachers in Spain, Latin-America and other countries.

8. Name of delegate and deputy

Delegate: Gabriel Pinto.

Deputy: Luis Moreno-Martínez.

9. Contact details of delegates.

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