

EuCheMS Div CED
Annual Report 2008/2009 – Israel

1. Abstract. The following were the most significant developments in the July 2008-June 2009 period as far as the chemical education in Israel is concerned: (1) The newly elected president of the Israel Chemical Society has declared that the improvement and advancement of chemical education – qualitatively and quantitatively – at all levels will be at the top of his and the Chem. Soc. Priorities during his cadency; (2) A special government-nominated committee recommended – towards the end of 2008 – to establish throughout the country, 15 regional learning centers of science and technology that will serve a larger number of schools in each region – both science teachers and students, mainly in lab-related work of juniors and seniors in secondary schools; and (3) The Israeli student delegates to the 2009 World Chemical Olympiad won the Gold and Bronze medals.

2. National education policy. The implementation, in schools, of the newly developed chemistry curriculum for high schools on the 3 and 5 unit levels, the essence of which is the development and implementation of modular learning units is successfully continuing. All the units of this new experimental program are in their second year of implementation and evaluation. They are in line with the recent paradigm shift – from rote learning to the development of students' thinking skills – strongly being pushed forward by the Israeli Ministry of Education. This shift is continuously being supported by persistent increase of the Evaluative Thinking-requiring problems in both chemistry classes in high schools and in the national high stake matriculation examinations. This year the greatest number in recent years of 12th grade students will be examined (in their matriculation examination), in accordance with goals and educational philosophy of this new curriculum. In order to ensure its successful implementation, parallel workshops, for leading chemistry teachers have been conducted via regional meetings throughout the school year, focusing on – “updating the content knowledge of new and innovative subjects in chemistry... preparation of learning materials for class implementation... discussions of the newly advocated teaching strategies for the development of students' thinking skills in the new curriculum, and ... training with respect to all laboratory programs: inquiry-based, computerized-, industry-oriented and microscale laboratory.”

The educational/science education departments (or 'equivalents') in the six Israeli universities pursue almost the entire chemical education-related research, chemistry curriculum development, take care – together with the Ministry of Education and selected high school teachers – of the yearly national chemistry matriculation examinations, as well as of most of the professional development of teachers of chemistry and the other science disciplines. In addition, there are a few other university/college-affiliated institutes and centers, mainly of teacher professional development, in which chemical education-related practice and research are constantly being pursued. Chemistry teaching, in the universities and other higher education institutions, follow the traditional modes of teaching chemistry at all levels, undergraduate and graduate alike. Occasionally, it is accompanied by design and implementation of complementary and/or differently-focused, newly-developed courses/programs, targeted at various students for attaining different goals (e.g., environmental chemistry) and/or 'science and technology for sustainability'.

3. Events in Chemical Education. A pre-chemistry Olympiad competition is being periodically held in the Technion within the annual “Chemiada” competition. The first place winners receive scholarships for first and second degree studies in chemistry and chemical engineering at the Technion. Eight of the above winners are usually selected and later participate in a summer camp towards the new upcoming world Olympiad.

4. Activities of the National Chemistry Society. The Israel Chemical Society (ICS) involvement in the Israeli chemical education is threefold: (a) special chemical education session (~ half a day) in the 2nd day of the Annual Meeting of the Society (last one in February, 2009), to which a chemical educator from abroad is invited as a speaker; (b) the yearly “Chemiada” (Chemistry Olympiad), annually organized and supervised, mainly by the Technion – Israel Institute of Technology; and (c) special awards and recognition of chemistry high school teachers and students who excelled in high school chemistry teaching and chemical research projects, respectively, during the previous (to the Annual Meeting) academic year.

5. Publications. As previously reported, chemical science education *research* in Israel is rather strong, being conducted actively and persistently, mainly in the universities as well as in several colleges. The resulting publications in the related leading international science/chemical education journals – *JRST*, *Chem. Educ.*, *Science Ed.*, *IJSE*, *RISE* and, of course, *CERP*, constitute clear evidence of this fruitful research activity. A chapter entitled: “From Teaching to ‘KNOW’ to learning to ‘THINK’ in Science Education” in which the ‘How to do it’ – is focused on the research-based *practice of chemistry teaching* (Authors: Zoller, U. and Levy Nahum, T.), is included in the 2nd Ed. of the International Handbook of Science Education, to be published by Springer, in early 2010.

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