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Professional Development of Chemistry Teachers Theory and Practice

Rachel Mamluk-Naaman Weizmann Institute of Science, Israel

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George Bodner Purdue University, USA

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Synopsis

Continuous professional development of chemistry teachers is essential for any effective chemistry teaching, due to the evolving nature of the subject matter and its instructional techniques. Professional development aims to keep chemistry teaching up-to-date and to make it more meaningful, more educationally effective, and better aligned to current requirements.

Hardback | 250 | 9781782627067 | £99.99 | \$140.00 | 16/05/2018

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Argumentation in Chemistry Education Research, Policy and Practice

Sibel Erduran University of Oxford, UK

Synopsis

Many studies have highlighted the importance of discourse in scientific understanding. Argumentation is a form of scientific discourse that plays a central role in the building of explanations, models and theories. Scientists use arguments to relate the evidence that they select from their investigations and to justify the claims that they make about their observations. The implication is that argumentation is a scientific habit of mind that needs to be appropriated by students and explicitly taught through suitable instruction. Edited by Sibel Erduran, an internationally recognised expert in chemistry education, this book brings together leading researchers to draw attention to research, policy and practice around the inclusion of argumentation in chemistry education. Split into three sections: Research on Argumentation in Chemistry Education, Resources and Strategies on Argumentation in Chemistry Education, and Argumentation in Context, this book blends practical resources and strategies with research-based evidence. The book contains state-of-the-art research and offers educators a balanced perspective on the theory and practice of argumentation in chemistry education.

Hardback | 300 | 9781788012126 | £99.99 | \$140.00 | 07/03/2019

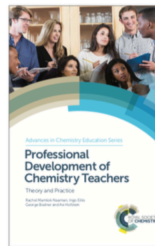
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<https://science-education-research.com/advances-in-chemistry-education/>



The Nature of the Chemical Concept Re-constructing Chemical Knowledge in Teaching and Learning

Keith S Taber University of Cambridge, UK

Synopsis

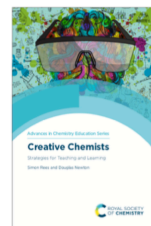
All chemistry teachers know that chemistry is a conceptual subject, especially at the upper end of secondary school and at university level, and that some students struggle to understand many chemical ideas. This book offers a step-by-step analysis and discussion of just why some students find chemistry difficult, by examining the nature of chemistry concepts, and how they are communicated and learnt. The book considers the idea of concepts itself; draws upon case studies of how canonical chemical concepts have developed; explores how chemical concepts become represented in curriculum and in classroom teaching; and discusses how conceptual learning and development occurs. This book will be invaluable to anyone interested in teaching and learning and offers guidance to teachers looking to make sense of, and respond to, the challenges of teaching chemistry.

Hardback | 354 | 9781782624608 | £99.99 | \$140.00 | 22/05/2019

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Creative Chemists Strategies for Teaching and Learning

Simon Rees University of Durham, UK

Douglas Newton University of Durham, UK

Synopsis

Creative thinking, be it that of the teacher or the student, has tended to be overlooked in science, but exercising it is important. This book shows how it can be done in chemistry, both in the context of creative chemistry teaching and in learning chemistry. Going beyond principles and ideology, readers will find practical strategies, tools, examples, and case studies in a variety of contexts to bring creative thinking theory into practice. Beginning with a discussion on the nature of creativity, the authors' debunk misconceptions and address the relationship between creativity and problem solving. Delving into opportunities for practising creative thinking in science, for instance, hypothesis generation and experiment design, the authors' then move on to discussions around assessing and evaluating creative thinking. Further areas covered include: multisensory chemistry, language and literacy, practical work and story-telling.

Hardback | 175 | 9781788015110 | £99.99 | \$140.00 | 30/06/2020

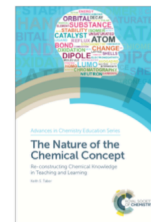
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Engaging Learners with Chemistry Projects to Stimulate Interest and Participation

Ilka Parchmann The Leibniz Institute for Science and Mathematics Education, Germany

Shirley Simon University College London, UK

Jan Apotheker University of Groningen, Netherlands

Synopsis

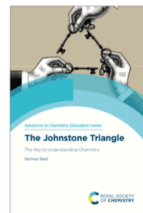
Describing context-based learning and engagement tools, applied to the fostering of long-term student engagement with chemistry, this book is ideal for those involved in professional development, chemistry teaching, chemistry education research, and practitioners in the chemical industry seeking to attract students to careers in the chemical sector. The editors set out a context-based theoretical framework and ask contributors to explore different approaches, discussing the design and implementation of projects that stimulate, foster and sustain student interest with the subject.

Hardback | 225 | 9781788015080 | £99.99 | \$140.00 | 31/07/2020

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The Johnstone Triangle The Key to Understanding Chemistry

Norman Reid Emeritus Professor, University of Glasgow, UK

Synopsis

Chemistry is often seen as a difficult subject to understand. This book focusses on the triangle model that Alex H. Johnstone developed in the early 1980s. Originally conceived in the context of making chemistry more accessible to a wider range of learners, the model has been applied in almost every area of education in chemistry at all stages of learning.

Hardback | 250 | 9781839161681 | £99.99 | \$140.00 | 21/01/2021

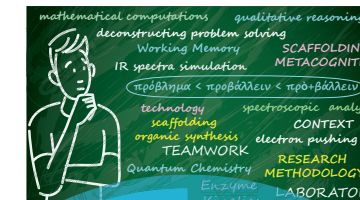
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Problems and Problem Solving in Chemistry Education

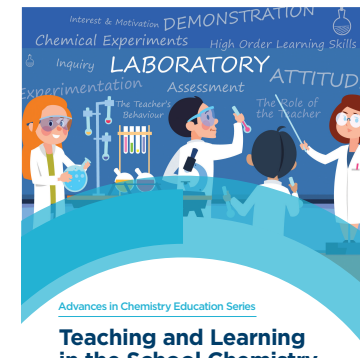
Analysing Data, Looking for Patterns and Making Deductions

Edited by Georgios Tsapalis



Nanochemistry for Chemistry Educators

Riam Abu Much, Kurt Winkelmann and Muhammad Hugerat



Teaching and Learning in the School Chemistry Laboratory

Avi Hofstein and Muhammad Hugerat

