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Nota di contenuto	Section A: Questions and Questioning in Science/STEM Education: Educating Students for Good Questioning in Science/STEM -- Primary School Students' Understanding of Posing Questions for Scientific Inquiry -- Questioning Patterns in STEM Learning: A Case Study -- Epistemic Growth in Students' Understanding and Concern about Trust: A Practice-oriented Approach to Learning Nature of Science -- Section B: Developing Science Teaching and Assessment: Developing Science Teaching and Assessment -- Enhancing Science Teachers' Language Awareness with the Use of a Content-Language Integrated Framework for Developing Student Writing -- The Cognitive Demands of Secondary Science Assessment Items: Refinements to a Classification Based on Semantic Gravity and Density -- Formative Assessment in Primary Science Classrooms in Singapore: Teachers' Pedagogical Reasoning and Practices -- The Integration of Geographical Information Systems (GIS) in the Curriculum -- Impacts on Content, Pedagogy, and Technology -- Integrated Science, Technology, Engineering, and Mathematics --

Problem Based Learning – Education for Sustainable Development (I-STEM-PBL ESD) FrameworkSection C: History, Philosophy and Sociology of Science/Engineering and Informal Learning -- : History, Philosophy and Sociology of Science/Engineering and Informal Learning -- Changes in the Teaching of Practical Chemistry during the Nineteenth Century at American Universities -- The Formation of Engineers in Research Labs during the COVID-19 Crisis -- Informal Learning of Science at Science Centers and Museums: Perspectives, Influences, and Issues.

Sommario/riassunto

This book presents the work of academics who contributed their work at the International Science Education Conference (ISEC) 2021, in alignment with the conference theme '20/20 Vision for Science Education Research.' Collectively, the chapters aim to evoke intellectual dialogues on current and future trends in science education. It features chapters that are grouped thematically into three sections: Epistemic Practices in Science/STEM education, Developing Science Teaching and Assessment, and History, Philosophy, and Sociology of Science/Engineering, and Informal Learning. Through the various sections, the book presents empirical studies in science and engineering classrooms or laboratories, puts forward a framework for problem-based learning, provides an account of a prominent scientist's efforts in promoting practical science through analysis of historical documents, and uncovers trends in informal science learning space research through a review of literature. Each section is introduced by a commentary with further insights and thought-provoking questions on ideas raised in the chapters. The book also includes a 'Notes to Our Future Colleagues' section in each chapter, which presents readers with a collective vision for the state of science education research in the year 2050.
