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<b>Collana</b>	Challenges in Physics Education, , 2662-8430
<b>Disciplina</b>	530.07 530.071
<b>Soggetti</b>	Physics - Study and teaching Science - Study and teaching Teachers - Training of Mathematics - Study and teaching Language and languages - Study and teaching Education in Physics Science Education Teaching and Teacher Education Mathematics Education Language Education
<b>Lingua di pubblicazione</b>	Inglese
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<b>Livello bibliografico</b>	Monografia
<b>Nota di bibliografia</b>	Includes bibliographical references.
<b>Nota di contenuto</b>	Topics of Physics Education and Connections to other Sciences -- Professional Competencies for Teaching Physics -- How to Teach a Teacher: Challenges and Opportunities in Physics Teacher Education in Germany and the U.S. -- Instructional Design -- Nature of Scientific Knowledge and Nature of Scientific Inquiry in Physics Lessons -- Instructional Coherence and the Development of Student Competence in Physics -- Multiple Representations and Learning Physics -- Physical-Mathematical Modelling and its Role in Learning Physics -- Physics Tasks -- Experiments in Physics Teaching -- Multimedia and Digital Media in Physics In-struction -- Instructional Explanations in Physics Teaching -- Language in physics instruction -- Students'

Sommario/riassunto

This book offers a comprehensive overview of the theoretical background and practice of physics teaching and learning and assists in the integration of highly interesting topics into physics lessons. Researchers in the field, including experienced educators, discuss basic theories, the methods and some contents of physics teaching and learning, highlighting new and traditional perspectives on physics instruction. A major aim is to explain how physics can be taught and learned effectively and in a manner enjoyable for both the teacher and the student. Close attention is paid to aspects such as teacher competences and requirements, lesson structure, and the use of experiments in physics lessons. The roles of mathematical and physical modeling, multiple representations, instructional explanations, and digital media in physics teaching are all examined. Quantitative and qualitative research on science education in schools is discussed, as quality assessment of physics instruction. The book is of great value to researchers involved in the teaching and learning of physics, to those training physics teachers, and to pre-service and practising physics teachers.