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| | Nota di contenuto | Preliminary Material / Russell Tytler , Vaughan Prain , Peter Hubber and Bruce Waldrip -- Representing and Learning in Science / Vaughan Prain and Russell Tytler -- Teachers' Initial Response to a Representational Focus / Bruce Waldrip and Vaughan Prain -- A Representation Construction Approach / Russell Tytler , Peter Hubber , Vaughan Prain and Bruce Waldrip -- Structuring Learning Sequences / Russell Tytler , Peter Hubber and Vaughan Prain -- Learning Through the Affordances of Representation Construction / Vaughan Prain and Russell Tytler -- Reasoning in Science through Representation / Russell Tytler , Vaughan Prain , Peter Hubber and Filocha Haslam -- Models and Learning Science / Peter Hubber and Russell Tytler -- Teacher Perspectives of a Representation Construction Approach to Teaching Science / Peter Hubber -- Assessment / Bruce Waldrip , Peter Hubber and Vaughan Prain -- The Nature of Student Learning and Knowing in Science / Russell Tytler and Vaughan Prain -- Implications for the Future / Vaughan Prain , Russell Tytler , Peter Hubber and Bruce Waldrip -- Representations and Models / John K. Gilbert -- References / Russell Tytler , Vaughan Prain , Peter Hubber and Bruce Waldrip. |
| | Sommario/riassunto | Constructing Representations to Learn in Science Current research into student learning in science has shifted attention from the traditional cognitivist perspectives of conceptual change to socio-cultural and semiotic perspectives that characterize learning in terms of induction into disciplinary literacy practices. This book builds on recent interest |

in the role of representations in learning to argue for a pedagogical practice based on students actively generating and exploring representations. The book describes a sustained inquiry in which the authors worked with primary and secondary teachers of science, on key topics identified as problematic in the research literature. Data from classroom video, teacher interviews and student artifacts were used to develop and validate a set of pedagogical principles and explore student learning and teacher change issues. The authors argue the theoretical and practical case for a representational focus. The pedagogical approach is illustrated and explored in terms of the role of representation to support quality student learning in science. Separate chapters address the implications of this perspective and practice for structuring sequences around different concepts, reasoning and inquiry in science, models and model based reasoning, the nature of concepts and learning, teacher change, and assessment. The authors argue that this representational focus leads to significantly enhanced student learning, and has the effect of offering new and productive perspectives and approaches for a number of contemporary strands of thinking in science education including conceptual change, inquiry, scientific literacy, and a focus on the epistemic nature of science.