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Developing an Online Curriculum - Lynnette R. Porter 2004-01-01 Developing an Online Educational Curriculum: Techniques and Technologies acts as a guidebook for teachers and administrators as they look for support with their online education programs. It offers teaching suggestions for everything from course development to time management and community building. The book is designed to provide information to help teachers work more effectively with online tools, develop course materials for existing online courses, work with the internet as a medium of education and complete daily activities - such as evaluating assignments, lecturing and communicating with students more easily. Administrators are also given support in their efforts to recruit, train, and retain online teachers, allocate resources for online education and evaluate online materials for promotion and tenure.

National Science Education Standards - National Research Council 1996-01-07 Americans agree that our students urgently need better science education. But what should they be expected to know and be able to do? Can the same expectations be applied across our diverse society? These and other fundamental issues are addressed in National Science Education Standardsâ€"a landmark development effort that reflects the contributions of thousands of teachers, scientists, science educators, and other experts across the country. The National Science Education Standards offer a coherent vision of what it means to be scientifically literate, describing what all students regardless of background or circumstance should understand and be able to do at different grade levels in various science categories. The standards address: The exemplary practice of science teaching that provides students with experiences that enable them to achieve scientific literacy. Criteria for assessing and analyzing students' attainments in science and the learning opportunities that school science programs afford. The nature and design of the school and district science program. The support and resources needed for students to learn science. These standards reflect the principles that learning science is an inquiry-based process, that science in schools should reflect the intellectual traditions of contemporary science, and that all Americans have a role in improving science education. This document will be invaluable to education policymakers, school system administrators, teacher educators, individual teachers, and concerned parents.

Debates in Science Education - Mike Watts 2014-01-03 What are the key debates in science teaching and learning today? Debates in Science Education explores the major issues all science teachers encounter in their daily professional lives. It

encourages critical reflection and aims to stimulate both novice and experienced teachers to think more deeply about their practice, and link research and evidence to what they have observed in schools. Written by expert science educators, chapters tackle established and contemporary issues enabling you to reach informed judgements and argue your point of view with deeper theoretical knowledge and understanding. Each chapter is supported and extended by carefully selected further reading and reflective questions. Key debates include: the impact of policy on science education; transition from primary to secondary school; getting right the secondary science curriculum; girls in science; sex education and science; school science and technology; language and communication in the classroom; world science, local science. With its combination of expert opinion and fresh insight, Debates in Science Education is the ideal companion for any student or practising teacher engaged in initial training, continuing professional development and Masters level study.

Argumentation in Science Education - Sibel Erduran 2007-12-06 Educational researchers are bound to see this as a timely work. It brings together the work of leading experts in argumentation in science education. It presents research combining theoretical and empirical perspectives relevant for secondary science classrooms. Since the 1990s, argumentation studies have increased at a rapid pace, from stray papers to a wealth of research exploring ever more sophisticated issues. It is this fact that makes this volume so crucial.

Science Education in Countries Along the Belt & Road - Ronghuai Huang 2022 This book aims to highlight science education in countries along the Belt and Road. It consists of 30 chapters divided into three main parts, namely Arab and African countries, Asian countries and European

countries,. We invited science education experts from 29 "Belt and Road" countries to introduce the current status of science education in their countries and the new requirements with the rapid evolution of Information Technology. The major contributions of this book include: 1) Provide the current status of science education in countries along the Belt and Road as well as the requirement for developing and improving science education in these countries; 2) Discuss new insights of science education in future years; 3) Inspire stakeholders to take effective initiatives to develop science education in countries along the Belt and Road. .

Makerspaces, Innovation and Science Education - Michael Tan 2022-02-28
This book provides an overview to a range of theories in science and technology that inform the different ways in which makerspaces can be educative. Makerspaces are an indispensable site for science, technology, engineering, and mathematics (STEM) instruction and pose novel risks and opportunities for STEM instruction. Educators are likely to reach towards activities that have a high degree of engagement, but this might result in observations like 'it looks like fun, but what are they learning?'. Beginning from the question of how we know what we know in science, the author asserts that understanding scientific knowledge requires us to know more than the abstract concepts typically presented in schools. The social and material aspects of knowledge are also important—these take the form of questions such as: What is the interplay between knowledge and power? How do we understand that we can have a 'feel' for materials and artefacts that we cannot completely describe in words? How do we know what ideas ought to be made real though technology and engineering? Significantly, this book also discusses the ethical dimensions of STEM education, in thinking about the kinds of

STEM education that could be useful for open futures. This book will be useful to graduate students and educators seeking an expansive view of STEM education. More generally, these ideas outline a possible new strategy for a vision of school that is not merely training or preparing students for work. Education needs to also prepare students for sociopolitical participation, and with STEM being central to our contemporary lives, this book provides insights for how this can happen in makerspaces.

Improving Subject Teaching - Robin Millar 2006-09-27 In many countries, questions are being raised about the quality and value of educational research. This book explores the relationship between research and practice in education. It looks at the extent to which current practice could be said to be informed by knowledge or ideas generated by research and at the extent to which the use of current practices or the adoption of new ones are, or could be, supported by research evidence. Science education is used as a case study but the issues considered apply to the teaching and learning of any curriculum subject. The book draws on the findings of four inter-related research studies and considers: how research might be used to establish greater consensus about curriculum; how research can inform the design of assessment tools and teaching interventions; teachers' and other science educators' perceptions of the influence of research on their teaching practices and their students' learning; the extent to which evidence can show that an educational practice 'works'.

Second International Handbook of Science Education - Barry Fraser 2011-12-14 The International Handbook of Science Education is a two volume edition pertaining to the most significant issues in science education. It is a follow-up to the first Handbook, published in 1998, which is seen as the most

authoritative resource ever produced in science education. The chapters in this edition are reviews of research in science education and retain the strong international flavor of the project. It covers the diverse theories and methods that have been a foundation for science education and continue to characterize this field. Each section contains a lead chapter that provides an overview and synthesis of the field and related chapters that provide a narrower focus on research and current thinking on the key issues in that field. Leading researchers from around the world have participated as authors and consultants to produce a resource that is comprehensive, detailed and up to date. The chapters provide the most recent and advanced thinking in science education making the Handbook again the most authoritative resource in science education.
Guide to Implementing the Next Generation Science Standards - National Research Council 2015-03-27

A Framework for K-12 Science Education and Next Generation Science Standards (NGSS) describe a new vision for science learning and teaching that is catalyzing improvements in science classrooms across the United States. Achieving this new vision will require time, resources, and ongoing commitment from state, district, and school leaders, as well as classroom teachers. Successful implementation of the NGSS will ensure that all K-12 students have high-quality opportunities to learn science. Guide to Implementing the Next Generation Science Standards provides guidance to district and school leaders and teachers charged with developing a plan and implementing the NGSS as they change their curriculum, instruction, professional learning, policies, and assessment to align with the new standards. For each of these elements, this report lays out recommendations for action around key issues and cautions about potential

pitfalls. Coordinating changes in these aspects of the education system is challenging. As a foundation for that process, Guide to Implementing the Next Generation Science Standards identifies some overarching principles that should guide the planning and implementation process. The new standards present a vision of science and engineering learning designed to bring these subjects alive for all students, emphasizing the satisfaction of pursuing compelling questions and the joy of discovery and invention. Achieving this vision in all science classrooms will be a major undertaking and will require changes to many aspects of science education. Guide to Implementing the Next Generation Science Standards will be a valuable resource for states, districts, and schools charged with planning and implementing changes, to help them achieve the goal of teaching science for the 21st century.

The World Book Encyclopedia - 2002

An encyclopedia designed especially to meet the needs of elementary, junior high, and senior high school students.

Urban Science Education for the Hip-Hop Generation - Christopher Emdin 2010-01-01 Christopher Emdin is an assistant professor of science education and director of secondary school initiatives at the Urban Science Education Center at Teachers College, Columbia University. He holds a Ph.D. in urban education with a concentration in mathematics, science and technology; a master's degree in natural sciences; and a bachelor's degree in physical anthropology, biology, and chemistry.

Science Education Research and Practice in Europe - Doris Jorde 2012-12-17 Each volume in the 7-volume series The World of Science Education reviews research in a key region of the world. These regions include North America, South and Latin America, Asia, Australia and New Zealand, Europe, Arab States, and Sub-Saharan

Africa. The focus of this Handbook is on science education in Europe. In producing this volume the editors have invited a range of authors to describe their research in the context of developments in the continent and further afield. In reading this book you are invited to consider the historical, social and political contexts that have driven developments in science education research over the years. A unique feature of science education in Europe is the impact of the European Union on research and development over many years. A growing number of multi-national projects have contributed to the establishment of a community of researchers increasingly accepting of methodological diversity. That is not to say that Europe is moving towards homogeneity, as this volume clearly shows.

The World of Science Education - 2019-02-11 The focus of this Handbook is on North American (Canada, US) science education and the scholarship that most closely supports this program. The reviews of the research situate what has been accomplished within a given field in North American rather an than international context.

Successful K-12 STEM Education - National Research Council 2011-06-22 Science, technology, engineering, and mathematics (STEM) are cultural achievements that reflect our humanity, power our economy, and constitute fundamental aspects of our lives as citizens, consumers, parents, and members of the workforce. Providing all students with access to quality education in the STEM disciplines is important to our nation's competitiveness. However, it is challenging to identify the most successful schools and approaches in the STEM disciplines because success is defined in many ways and can occur in many different types of schools and settings. In addition, it is difficult to determine whether the success of a school's students is caused

by actions the school takes or simply related to the population of students in the school. Successful K-12 STEM Education defines a framework for understanding "success" in K-12 STEM education. The book focuses its analysis on the science and mathematics parts of STEM and outlines criteria for identifying effective STEM schools and programs. Because a school's success should be defined by and measured relative to its goals, the book identifies three important goals that share certain elements, including learning STEM content and practices, developing positive dispositions toward STEM, and preparing students to be lifelong learners. A successful STEM program would increase the number of students who ultimately pursue advanced degrees and careers in STEM fields, enhance the STEM-capable workforce, and boost STEM literacy for all students. It is also critical to broaden the participation of women and minorities in STEM fields. Successful K-12 STEM Education examines the vast landscape of K-12 STEM education by considering different school models, highlighting research on effective STEM education practices, and identifying some conditions that promote and limit school- and student-level success in STEM. The book also looks at where further work is needed to develop appropriate data sources. The book will serve as a guide to policy makers; decision makers at the school and district levels; local, state, and federal government agencies; curriculum developers; educators; and parent and education advocacy groups. *Internet Environments for Science Education* - Marcia C. Linn 2013-07-04 Internet Environments for Science Education synthesizes 25 years of research to identify effective, technology-enhanced ways to convert students into lifelong science learners--one inquiry project at a time. It offers design principles for development of innovations; features tested, customizable

inquiry projects that students, teachers, and professional developers can enact and refine; and introduces new methods and assessments to investigate the impact of technology on inquiry learning. The methodology--design-based research studies--enables investigators to capture the impact of innovations in the complex, inertia-laden educational enterprise and to use these findings to improve the innovation. The approach--technology-enhanced inquiry--takes advantage of global, networked information resources, sociocognitive research, and advances in technology combined in responsive learning environments. Internet Environments for Science Education advocates leveraging inquiry and technology to reform the full spectrum of science education activities--including instruction, curriculum, policy, professional development, and assessment. The book offers: *the knowledge integration perspective on learning, featuring the interpretive, cultural, and deliberate natures of the learner; *the scaffolded knowledge integration framework on instruction summarized in meta-principles and pragmatic principles for design of inquiry instruction; *a series of learning environments, including the Computer as Learning Partner (CLP), the Knowledge Integration Environment (KIE), and the Web-based Inquiry Science Environment (WISE) that designers can use to create new inquiry projects, customize existing projects, or inspire thinking about other learning environments; *curriculum design patterns for inquiry projects describing activity sequences to promote critique, debate, design, and investigation in science; *a partnership model establishing activity structures for teachers, pedagogical researchers, discipline experts, and technologists to jointly design and refine inquiry instruction; *a professional development model involving mentoring by an expert teacher; *projects

about contemporary controversy enabling students to explore the nature of science; *a customization process guiding teachers to adapt inquiry projects to their own students, geographical characteristics, curriculum framework, and personal goals; and *a Web site providing additional links, resources, and community tools at www.InternetScienceEducation.org

Handbook of Research on Online Discussion-Based Teaching Methods - Wilton, Lesley 2020-05-01
In this digital age, faculty, teachers, and teacher educators are increasingly expected to adopt and adapt pedagogical perspectives to support student learning in instructional environments featuring online or blended learning. One highly adopted element of online and blended learning involves the use of online learning discussions. Discussion-based learning offers a rich pedagogical context for creating learning opportunities as well as a great deal of flexibility for a wide variety of learning and learner contexts. As post-secondary and, increasingly, K-12 institutions cope with the rapid growth of online learning, and an increase in the cultural diversity of learners, it is critical to understand, at a detailed level, the relationship between online interaction and learning and how educationally-effective interactions might be nurtured, in an inclusive way, by instructors. The Handbook of Research on Online Discussion-Based Teaching Methods is a cutting-edge research publication that seeks to identify promising designs, pedagogical and assessment strategies, conceptual models, and theoretical frameworks that support discussion-based learning in online and blended learning environments. This book provides a better understanding of the effects and both commonalities and differences of new tools that support interaction, such as video, audio, and real-time interaction in discussion-based

learning. Featuring a wide range of topics such as gamification, intercultural learning, and digital agency, this book is ideal for teachers, educational software developers, instructional designers, IT consultants, academicians, curriculum designers, researchers, and students.

Policy and Practice in Science Education for the Gifted - Manabu Sumida 2017-03-16
Gifted education has come to be regarded as a key national programme in many coutnries, and gifted education in science disciplines is now being recognised to be of major importance for economic and technological development. Despite these initiatives and developments internationally, there are very few discussions on gifted education in science drawing upon practices and experiences in different national contexts. In support of an international dialogue between researchers and practitioners, often working within isolated traditions, this book offers information on key influential approaches to science education for gifted learners and surveys current policy and practice from a diverse range of educational contexts. The volume offers an informative introduction for those new to studying gifted science education, as well as supporting the development of the field by offering examples of critical thinking about key issues, and accounts of the influences at work within education systems and the practical complexities of providing science education for the gifted. The contributions draw upon a variety of research approaches to offer insights into the constraints and affordancxes of working within particular policy contexts, and the strengths and challenges inherent in different approaches to practice. Chapters include: Teaching science to the gifted in English state schools: locating a compromised 'gifted & talented' policy within its systemic context Models of education for science talented

adolescents in the United States: Past, present, and likely future trends Navigating the shifting terrain between policy and practice for gifted learners in Tanzania Science education for female indigenous gifted students in the Mexican context Gifted Science Education in the Context of Japanese Standardization This book will appeal to scholars, practitioners and policy makers who are in the field of gifted science education.

Internet Environments for Science Education - Marcia C. Linn 2013-07-04 Internet Environments for Science Education synthesizes 25 years of research to identify effective, technology-enhanced ways to convert students into lifelong science learners--one inquiry project at a time. It offers design principles for development of innovations; features tested, customizable inquiry projects that students, teachers, and professional developers can enact and refine; and introduces new methods and assessments to investigate the impact of technology on inquiry learning. The methodology--design-based research studies--enables investigators to capture the impact of innovations in the complex, inertia-laden educational enterprise and to use these findings to improve the innovation. The approach--technology-enhanced inquiry--takes advantage of global, networked information resources, sociocognitive research, and advances in technology combined in responsive learning environments. Internet Environments for Science Education advocates leveraging inquiry and technology to reform the full spectrum of science education activities--including instruction, curriculum, policy, professional development, and assessment. The book offers: *the knowledge integration perspective on learning, featuring the interpretive, cultural, and deliberate natures of the learner; *the scaffolded knowledge integration framework on instruction summarized in meta-principles

and pragmatic principles for design of inquiry instruction; *a series of learning environments, including the Computer as Learning Partner (CLP), the Knowledge Integration Environment (KIE), and the Web-based Inquiry Science Environment (WISE) that designers can use to create new inquiry projects, customize existing projects, or inspire thinking about other learning environments; *curriculum design patterns for inquiry projects describing activity sequences to promote critique, debate, design, and investigation in science; *a partnership model establishing activity structures for teachers, pedagogical researchers, discipline experts, and technologists to jointly design and refine inquiry instruction; *a professional development model involving mentoring by an expert teacher; *projects about contemporary controversy enabling students to explore the nature of science; *a customization process guiding teachers to adapt inquiry projects to their own students, geographical characteristics, curriculum framework, and personal goals; and *a Web site providing additional links, resources, and community tools at www.InternetScienceEducation.org

Computer Science and Engineering Education for Pre-collegiate Students and Teachers - Andrea Burrows 2019-06-11
Now more than ever, as a worldwide STEM community, we need to know what pre-collegiate teachers and students explore, learn, and implement in relation to computer science and engineering education. As computer science and engineering education are not always "stand-alone" courses in pre-collegiate schools, how are pre-collegiate teachers and students learning about these topics? How can these subjects be integrated? Explore six articles in this book that directly relate to the currently hot topics of computer science and engineering education as they tie into pre-collegiate

science, technology, and mathematics realms. There is a systematic review article to set the stage of the problem. Following this overview are two teacher-focused articles on professional development in computer science and entrepreneurship venture training. The final three articles focus on varying levels of student work including pre-collegiate secondary students' exploration of engineering design technology, future science teachers' (collegiate students) perceptions of engineering, and pre-collegiate future engineers' exploration of environmental radioactivity. All six articles speak to computer science and engineering education in pre-collegiate forums, but blend into the collegiate world for a look at what all audiences can bring to the conversation about these topics.

Change Agents in Science Education - Koshi Dhingra 2006
In this engaging and well crafted book, Change Agents in Science Educationsituates the science educator in dynamic social, political, and cultural environments where individuals are engaged in science for change. A wide range of educational contexts are described in the book, including urban school settings in the U. S., slum communities in Mumbai, India, an agricultural community in Benin, Africa, a children's educational television program production company in the U. S. In each context, powerful examples of how science was enacted to transform ways of thinking and doing are demonstrated. Each contributor shares experiences with science, and the challenges, triumphs and lessons learned which need to be considered and addressed as part of the role of the science educator. Change, it is argued, needs to be facilitated on a variety of levels in order for learning to take place.Science educators working in a wide range of settings, community-based educational groups, and students and researchers

interested in formal and informal science education, will benefit from the perspectives provided in this book.

Network Science In Education - Catherine B. Cramer 2018-10-22 Around the globe, there is an increasingly urgent need to provide opportunities for learners to embrace complexity; to develop the many skills and habits of mind that are relevant to today's complex and interconnected world; and to make learning more connected to our rapidly changing workplace and society. This presents an opportunity to (1) leverage new paradigms for understanding the structure and function of teaching and learning communities, and (2) to promote new approaches to developing methods, curricular materials, and resources. Network science - the study of connectivity - can play an important role in these activities, both as an important subject in teaching and learning and as a way to develop interconnected curricula. Since 2010, an international community of network science researchers and educators has come together to raise the global level of network literacy by applying ideas from network science to teaching and learning. Network Science in Education - which refers to both this community and to its activities - has evolved in response to the escalating activity in the field of network science and the need for people to be able to access the field through education channels. Network Science In Education: Transformational Approaches in Teaching and Learning appeals to both instructors and professionals, while offering case studies from a wide variety of activities that have been developed around the globe: the creation of entirely new courses and degree programs; tools for K-20 learners, teachers, and the general public; and in-depth analysis of selected programs. As network-based pedagogy and the community of practice continues to grow,

we hope that the book's readers will join this vibrant network education community to build on these nascent ideas and help deepen the understanding of networks for all learners.

Handbook of Research on Science Education - Sandra K. Abell 2013-03-07
This state-of-the art research Handbook provides a comprehensive, coherent, current synthesis of the empirical and theoretical research concerning teaching and learning in science and lays down a foundation upon which future research can be built. The contributors, all leading experts in their research areas, represent the international and gender diversity that exists in the science education research community. As a whole, the Handbook of Research on Science Education demonstrates that science education is alive and well and illustrates its vitality. It is an essential resource for the entire science education community, including veteran and emerging researchers, university faculty, graduate students, practitioners in the schools, and science education professionals outside of universities. The National Association for Research in Science Teaching (NARST) endorses the Handbook of Research on Science Education as an important and valuable synthesis of the current knowledge in the field of science education by leading individuals in the field. For more information on NARST, please visit: http://www.narst.org/.

Other People's Children - Lisa D. Delpit 2006
An updated edition of the award-winning analysis of the role of race in the classroom features a new author introduction and framing essays by Herbert Kohl and Charles Payne, in an account that shares ideas about how teachers can function as "cultural transmitters" in contemporary schools and communicate more effectively to overcome race-related academic challenges. Original.

Data Science in Education Using R - Ryan A. Estrellado 2020-10-26 Data Science in Education Using R is the go-to reference for learning data science in the education field. The book answers questions like: What does a data scientist in education do? How do I get started learning R, the popular open-source statistical programming language? And what does a data analysis project in education look like? If you're just getting started with R in an education job, this is the book you'll want with you. This book gets you started with R by teaching the building blocks of programming that you'll use many times in your career. The book takes a "learn by doing" approach and offers eight analysis walkthroughs that show you a data analysis from start to finish, complete with code for you to practice with. The book finishes with how to get involved in the data science community and how to integrate data science in your education job. This book will be an essential resource for education professionals and researchers looking to increase their data analysis skills as part of their professional and academic development.

Improving Computer Science Education - Djordje M. Kadijevich 2013-02-11 Improving Computer Science Education examines suitable theoretical frameworks for conceptualizing teaching and learning computer science. This highly useful book provides numerous examples of practical, "real world" applications of major computer science information topics, such as: • Spreadsheets • Databases • Programming Each chapter concludes with a section that summarzies recommendations for teacher professional development. Traditionally, computer science education has been skills-focused and disconnected from the reality students face after they leave the classroom. Improving Computer Science Education makes the subject matter useful and meaningful by connecting it explicitly to students' everyday lives.

International Perspectives on the Contextualization of Science Education - Ingrid Sánchez Tapia 2020-02-03 This book explores how science learning can be more relevant and interesting for students and teachers by using a contextualized approach to science education. The contributors explore the contextualization of science education from multiple angles, such as teacher education, curriculum design, assessment and educational policy, and from multiple national perspectives. The aim of this exploration is to provide and inspire new practical approaches to bring science education closer to the lives of students to accelerate progress towards global scientific literacy. The book presents real life examples of how to make science relevant for children and adolescents of diverse ethnic and language backgrounds, socioeconomic status and nationalities, providing tools and guidance for teacher educators and researchers to improve the contextualization and cultural relevance of their practice. The book includes rigorous studies demonstrating that the contextualization of science learning environments is essential for student engagement in learning science and practitioners' reflections on how to apply this knowledge in the classroom and at national scale. This approach makes this book valuable for researchers and professors of science education and international education interested in designing teacher education courses that prepare future teachers to contextualize their teaching and in adding a critical dimension to their research agendas.

A Framework for K-12 Science Education - National Research Council 2012-02-28 Science, engineering, and technology permeate nearly every facet of modern life and hold the key to solving many of humanity's most pressing current and future challenges. The United States' position in the global economy is

declining, in part because U.S. workers lack fundamental knowledge in these fields. To address the critical issues of U.S. competitiveness and to better prepare the workforce, A Framework for K-12 Science Education proposes a new approach to K-12 science education that will capture students' interest and provide them with the necessary foundational knowledge in the field. A Framework for K-12 Science Education outlines a broad set of expectations for students in science and engineering in grades K-12. These expectations will inform the development of new standards for K-12 science education and, subsequently, revisions to curriculum, instruction, assessment, and professional development for educators. This book identifies three dimensions that convey the core ideas and practices around which science and engineering education in these grades should be built. These three dimensions are: crosscutting concepts that unify the study of science through their common application across science and engineering; scientific and engineering practices; and disciplinary core ideas in the physical sciences, life sciences, and earth and space sciences and for engineering, technology, and the applications of science. The overarching goal is for all high school graduates to have sufficient knowledge of science and engineering to engage in public discussions on science-related issues, be careful consumers of scientific and technical information, and enter the careers of their choice. A Framework for K-12 Science Education is the first step in a process that can inform state-level decisions and achieve a research-grounded basis for improving science instruction and learning across the country. The book will guide standards developers, teachers, curriculum designers, assessment developers, state and district science administrators, and educators who teach science in informal environments.

Scientific Teaching - Jo Handelsman 2007 Seasoned classroom veterans, pre-tenured faculty, and neophyte teaching assistants alike will find this book invaluable. HHMI Professor Jo Handelsman and her colleagues at the Wisconsin Program for Scientific Teaching (WPST) have distilled key findings from education, learning, and cognitive psychology and translated them into six chapters of digestible research points and practical classroom examples. The recommendations have been tried and tested in the National Academies Summer Institute on Undergraduate Education in Biology and through the WPST. Scientific Teaching is not a prescription for better teaching. Rather, it encourages the reader to approach teaching in a way that captures the spirit and rigor of scientific research and to contribute to transforming how students learn science.
Online Science Learning: Best Practices and Technologies - Downing, Kevin 2008-05-31

The continued growth in general studies and liberal arts and science programs online has led to a rise in the number of students whose science learning experiences are web-based. However, little is known about what is actually going on in web-based science courses at the level of the disciplines within liberal arts and sciences or the corresponding course design features. Online Science Learning: Best Practices and Technologies reviews trends and efforts in web-based science instruction and evaluates contemporary philosophies and pedagogies of online science instruction. This title on an emergent and vital area of education clearly demonstrates how to enrich the academic character and quality of web-based science instruction.
Science Education at the Nexus of Theory and Practice - 2008-01-01 This book is a compilation of papers from the inaugural International Science Education Conference held at the National Institute of

Education (Singapore). The title, Science Education at the Nexus of Theory and Practice, reflects a pressing yet ongoing concern worldwide to integrate theory and practice in science education and the reader will find something of interest to both science education practitioners and researchers.

Multiple Literacy and Science Education: ICTs in Formal and Informal Learning Environments - Rodrigues, Susan 2009-12-31 "This book explores various learning mediums and their consequences within a classroom context to synchronize understanding within the schooling fields"--Provided by publisher.

Learning from Animations in Science Education - Len Unsworth 2020-11-10 This book examines educational semiotics and the representation of knowledge in school science. It discusses the strategic integration of animation in science education. It explores how learning through the creation of science animations takes place, as well as how animation can be used in assessing student's science learning. Science education animations are ubiquitous in a variety of different online sites, including perhaps the most popularly accessed YouTube site, and are also routinely included as digital augmentations to science textbooks. They are popular with students and teachers and are a prominent feature of contemporary science teaching. The proliferation of various kinds of science animations and the ready accessibility of sophisticated resources for creating them have emphasized the importance of research into various areas: the nature of the semiotic construction of knowledge in the animation design, the development of critical interpretation of available animations, the strategic selection and use of animations to optimize student learning, student creation of science animations, and using animation in assessing student science learning. This book brings together new

developments in these research agendas to further multidisciplinary perspectives on research to enhance the design and pedagogic use of animation in school science education. Chapter 1 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.
Cases on Research-Based Teaching Methods in Science Education - de Silva, Eugene 2014-08-31 While the great scientists of the past recognized a need for a multidisciplinary approach, today's schools often treat math and science as subjects separate from the rest. This not only creates a disinterest among students, but also a potential learning gap once students reach college and then graduate into the workforce. Cases on Research-Based Teaching Methods in Science Education addresses the problems currently facing science education in the USA and the UK, and suggests a new hands-on approach to learning. This book is an essential reference source for policymakers, academicians, researchers, educators, curricula developers, and teachers as they strive to improve education at the elementary, secondary, and collegiate levels.
Inspired College Teaching - Maryellen Weimer 2010-02-22 Praise for Inspired College Teaching "The thoughtfulness, personalization, and consideration Maryellen Weimer demonstrates in discussing the experience of faculty members; her ability to identify issues that are shared and solvable; and her suggestions and solutions to commonly experienced stressors and difficulties in college teaching are major strengths of this volume. In addition, her personal and professional reflections on her long career as a faculty member, writer, and faculty developer expose tantalizing research questions that young education researchers might want to examine. The originality of this volume is its exploration of and reflection on

a faculty member's career from a long-term perspective. The focus on iterative self and course renewal is personal and thus practical. In a way, it is a 'workshop between book covers' or perhaps several workshops!" Laura L. B. Border, director, Graduate Teacher Program and Collaborative Preparing Future Faculty Network, University of Colorado at Boulder "A book by Maryellen Weimer always displays her wonderful grasp of the literature on college teaching and learning, her ability to tell good stories, and her wit and wisdom. This one is no exception." Nancy Van Note Chism, professor, Indiana University School of Education, Indiana University-Purdue University Indianapolis "Although I work at a faculty teaching center and encounter many books on teaching, I have seen very few that span the full arc of the teaching career and what steps can be taken at each stage in order to retain vitality all the way through the way that this book does. I look forward to getting my own copy and using it as a resource in the faculty development activities of my center. It will have a wide readership." Mano Singham, University Center for Innovation in Teaching and Education, Case Western Reserve University

Teaching Science Online - Dietmar Kennepohl 2016-08-31 With the increasing focus on science education, growing attention is being paid to how science is taught. Educators in science and science-related disciplines are recognizing that distance delivery opens up new opportunities for delivering information, providing interactivity, collaborative opportunities and feedback, as well as for increasing access for students. This book presents the guidance of expert science educators from the US and from around the globe. They describe key concepts, delivery modes and emerging technologies, and offer models of practice. The book places particular emphasis on experimentation, lab and field work as they are fundamentally part of the education in most

scientific disciplines. Chapters include: * Discipline methodology and teaching strategies in the specific areas of physics, biology, chemistry and earth sciences. * An overview of the important and appropriate learning technologies (ICTs) for each major science. * Best practices for establishing and maintaining a successful course online. * Insights and tips for handling practical components like laboratories and field work. * Coverage of breaking topics, including MOOCs, learning analytics, open educational resources and m-learning. * Strategies for engaging your students online. A companion website presents videos of the contributors sharing additional guidance, virtual labs simulations and various additional resources.

The Re-emergence of Values in Science Education - Deborah Corrigan 2007 Issues relating to values have always had a place in the school science curriculum. Sometimes this has been only in terms of the inclusion of topics such as 'the nature of science' and/or 'scientific method' and/or particular intentions for laboratory work that relate to 'scientific method.'sometimes it has been much broader, for example in curricula with STS emphases. Of importance to aspects of this proposal is that different countries/cultures have had different traditions in terms of the place of values in the school [science] curriculum. One obvious very broad difference of this form is the central place in [science] education thinking in many European countries of bildung, and the complete absence of this construct from most [science] curriculum thinking in English speaking contexts. There are numbers of such country/cultural differences. In the 1990s many countries moved towards various conceptualizations of Outcomes Based Education - OBE (sometimes so labelled and sometimes not). It was usual (but not universal) for OBE focused science curricula to have constrained views of the

values that should be implicit and explicit in curriculum; that is views concerned only with 'the nature of science' and 'scientific method' (both usually seen as quite unproblematic). Currently there are a number of education systems that are changing again, and choosing to move away from Outcomes Based Education (for example, South Africa and several Australian states). One of the most interesting features of many of these movements is the re-embracing of a wider view of the science curriculum, including a reconsideration of the nature and place of the values associated with science in the purposes for and approaches to science education.

Forensic Science Education and Training - Anna Williams 2017-04-05
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Long-term Research and Development in Science Education - Avi Hofstein 2021-10-25
The book consists of 16 chapters and 2 commentaries describing long term R&D projects in science and mathematics education conducted in the Department of Science Teaching, The Weizmann Institute of Science. Almost all the chapters describe long-term projects, some over the period of 50 years.