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AGJFUS - TATE SIENA

Linn and Hsi show how computers, teachers, and peers can serve as learning partners--helping students build on their ideas and become lifelong science learners. They invite everyone interested in improving science education to build on their experiences, share insights on the Internet, and create instruction. Computers, Teachers, Peers: * offers case studies to bring the ideas of students learning science to life. *Join Sasha, Chris, Pat, and Lee as they try to make sense of experiments using computers to display data in real time;* * provides principles to help teachers improve their instruction, use technology better, and inspire more students to love science. *Find out how to use visualization tools, online discussion, and more to make science relevant;* * gives researchers and instructional designers a model for effective research and curriculum design. *Linn and Hsi report that the partnership approach to research resulted in a 400% increase in student understanding of science;* * helps schools develop technology plans that continuously improve science instruction. *Find out how schools can design better ways to use technology for learning;* * describes a partnership inquiry process where science teachers, science education researchers, discipline specialists, and technologists consider each others' perspectives and jointly design instruction. *Boys and girls are equally successful in the resulting science courses;* and * features practical tools for learning and instruction, including "Points to Ponder"--to encourage reflection on the ideas in each chapter (partnership groups or classes might use the points as discussion starters or assignments), and "Ask Mr. K."--an interview, in each chapter, with the classroom teacher who was a founding member of the CLP partnership (in these interviews Mr. K. adds insights from his own classroom experiences). This

book is supplemented by a CD-ROM (included in each copy) and a Web site (www.clp.berkeley.edu) with the Computers as Learning Partners curriculum, lesson plans, a Quicktime virtual reality visit to the classroom, copies of assessments, opportunities to join partnerships, and more. For readers who wish for more information, Related Readings are cited, including works by authors mentioned in each chapter. Additional works by other authors who inspired the authors appear in the bibliography, on the website, and on the CD-ROM. An annotated bibliography of papers by the members of the CLP partnership also appears at the website and on the CD-ROM.

Explains how to build complex scripting functionality with minimal coding, providing coverage of functions ranging from incorporating Ajax apps and overcoming the limits of HTML and CSS to building plugins and using animation. Original.

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 in-

struction 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

This volume is based on papers presented at the 30th Carnegie Mellon Symposium on Cognition. This particular symposium was conceived in reference to the 1974 symposium entitled Cognition and Instruction. In the 25 years since that symposium, reciprocal relationships have been forged between psychology and education, research and practice, and laboratory and classroom learning contexts. Synergistic advances in theories, empirical findings, and instructional practice have been facilitated by the establishment of new interdisciplinary journals, teacher education courses, funding initiatives, and research institutes. So, with all of this activity, where is the field of cognition and instruction? How much progress has been made in 25 years? What remains to be done? This volume proposes and illustrates some exciting and challenging answers to these questions. Chapters in this volume describe advances and challenges in four areas, including development and instruction, teachers and instructional strategies, tools for learning from instruction, and

social contexts of instruction and learning. Detailed analyses of tasks, subjects' knowledge and processes, and the changes in performance over time have led to new understanding of learners' representations, their use of multiple strategies, and the important role of metacognitive processes. New methods for assessing and tracking the development and elaboration of knowledge structures and processing strategies have yielded new conceptualizations of the process of change. Detailed cognitive analysis of expert teachers, as well as a direct focus on enhancing teachers' cognitive models of learners and use of effective instructional strategies, are other areas that have seen tremendous growth and refinement in the past 25 years. Similarly, the strong impact of curriculum materials and activities based on a thorough cognitive analysis of the task has been extended to the use of technological tools for learning, such as intelligent tutors and complex computer based instructional interfaces. Both the shift to conducting a significant portion of the cognition and instruction research in real classrooms and the increased collabo-

ration between academics and educators have brought the role of the social context to center stage.

Science Learning and Instruction describes advances in understanding the nature of science learning and their implications for the design of science instruction. The authors show how design patterns, design principles, and professional development opportunities coalesce to create and sustain effective instruction in each primary scientific domain: earth science, life science, and physical science. Calling for more in depth and less fleeting coverage of science topics in order to accomplish knowledge integration, the book highlights the importance of designing the instructional materials, the examples that are introduced in each scientific domain, and the professional development that accompanies these materials. It argues that unless all these efforts are made simultaneously, educators cannot hope to improve science learning outcomes. The book also addresses how many policies, including curriculum, standards, guidelines, and standardized tests, work

against the goal of integrative understanding, and discusses opportunities to rethink science education policies based on research findings from instruction that emphasizes such understanding.

PRINCIPLES OF ENGINEERING will help your students better understand the engineering concepts, mathematics, and scientific principles that form the foundation of the Project Lead the Way (PLTW) Principles Of Engineering course. Important concepts and processes are explained throughout using full-color photographs and illustrations. Appropriate for high school students, the mathematics covered includes algebra and trigonometry. The strong pedagogical features to aid comprehension include: Case Studies, boxed articles such as Fun Facts and Points of Interest, Your Turn activities, suggestions for Off-Road Exploration, connections to STEM concepts, Career Profiles, Design Briefs, and example pages from Engineers' Notebooks. Each chapter concludes with questions designed to test your students' knowledge of information presented in the chapter, along with a hands-on challenge or exercise that compliments the content and lends itself to exploration in the classroom. Key vocabulary terms that align with those contained in the PLTW POE course are highlighted throughout the book and emphasized in margin definitions. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.