Informatics Education - Supporting Computational Thinking

Roland Mittermeir 2008-06-19

This book constitutes the refereed proceedings of the Third International Conference on Informatics in Secondary Schools - Evolution and Perspectives, ISSEP 2008, held in Torun, Poland in July 2008. The 28 revised full papers presented together with 4 invited papers were carefully reviewed and selected from 63 submissions. A broad variety of topics related to teaching informatics in secondary schools is addressed ranging from national experience reports to paedagogical and methodological issues. The papers are organized in topical sections on informatics, a challenging topic, didactical merits of robot-based instruction, transfer of knowledge and concept formation, working with objects and programming, strategies for writing textbooks and teacher education, national and international perspectives on ICT education, as well as e-learning.

Informatics Education - Supporting Computational Thinking

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Informatics Education – Supporting Computational Thinking contains papers presented at the Third International Conference on Informatics in Secondary Schools – Evolution and Perspective, ISSEP 2008, held in July 2008 in Torun, Poland. As with the proceedings of the two previous ISSEP conferences (2005 in Klagfurt, Austria, and 2006 in Vilnius, Lithuania), the papers presented in this volume address issues of informatics education transcending national boundaries and, therefore, transcending differences in the various national legislation and organization of the educational system. Observing these issues, one might notice a trend. The proceedings of the First ISSEP were termed From Computer Literacy to Informatics Fundamentals [1]. There, broad room was given to general education in ICT. The ECDL, the European Computer Driving License, propagated since the late 1990s, had prevalent school at this time already on a broad scale and teachers, parents, as well as pupils were rather happy
with this situation. Teachers had material that had a clear scope, was relatively easy to teach, and especially easy to examine. Parents had the assurance that their children learn “modern and relevant stuff,” and for kids the computer was sufficiently modern so that anything that had to do with computers was considered to be attractive. Moreover, the difficulties of programming marking the early days of informatics education in school seemed no longer relevant. Some colleagues had a more distant vision though.

Computational Thinking in the STEM Disciplines - Myint Swe Khine
2018-08-14 This book covers studies of computational thinking related to linking, infusing, and embedding computational thinking elements to school curricula, teacher education and STEM related subjects. Presenting the distinguished and exemplary works by educators and researchers in the field highlighting the contemporary trends and issues, creative and unique approaches, innovative methods, frameworks, pedagogies and theoretical and practical aspects in computational thinking. A decade ago the notion of computational thinking was introduced by Jeannette Wing and envisioned that computational thinking will be a fundamental skill that complements to reading, writing and arithmetic for everyone and represents a universally applicable attitude. The computational thinking is considered a thought processes involved in a way of solving problems, designing systems, and understanding human behaviour. Assimilating computational thinking at young age will assist them to enhance problem solving skills, improve logical reasoning, and advance analytical ability - key attributes to succeed in the 21st century. Educators around the world are investing their relentless effort in equipping the young generation with real-world skills ready for the demand and challenges of the future. It is commonly believed that computational thinking will play a pivotal and dominant role in this endeavour. Wide-ranging research on and application of computational thinking in education have been emerged in the last ten years. This book will document attempts to conduct systematic, prodigious and multidisciplinary research in computational thinking and present their findings and accomplishments.

Teaching Computational Thinking in Primary Education - Ozcinar,

Huseyin 2017-10-31 Computational technologies have been impacting human life for years. Teaching methods must adapt accordingly to provide the next generation with the necessary knowledge to further advance these human-assistive technologies. Teaching Computational Thinking in Primary Education is a crucial resource that examines the impact that instructing with a computational focus can have on future learners. Highlighting relevant topics that include multifaceted skillsets, coding, programming methods, and digital games, this scholarly publication is ideal for educators, academicians, students, and researchers who are interested in discovering how the future of education is being shaped.

Informatics in Schools. Sustainable Informatics Education for Pupils of all Ages - Ira Diethelm 2013-02-26 This book constitutes the refereed proceedings of the 6th International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, ISSEP 2013, held in Oldenburg, Germany, in February/March 2013. The 15 full papers included in this volume were carefully reviewed and selected from 48 submissions; in addition the book contains two keynote talks in full-paper length. The contributions are organized in topical sections named: from computer usage to computational thinking; algorithmic and computational thinking; games; informatics in the context of other disciplines; and competence-based learning and retention of competencies.

Research Anthology on Computational Thinking, Programming, and Robotics in the Classroom - Management Association, Information Resources 2021-07-16 The education system is constantly growing and developing as more ways to teach and learn are implemented into the classroom. Recently, there has been a growing interest in teaching computational thinking with schools all over the world introducing it to the curriculum due to its ability to allow students to become proficient at problem solving using logic, an essential life skill. In order to provide the best education possible, it is imperative that computational thinking strategies, along with programming skills and the use of robotics in the classroom, be implemented in order for students to achieve maximum thought processing skills and computer competencies. The Research
Anthology on Computational Thinking, Programming, and Robotics in the Classroom is an all-encompassing reference book that discusses how computational thinking, programming, and robotics can be used in education as well as the benefits and difficulties of implementing these elements into the classroom. The book includes strategies for preparing educators to teach computational thinking in the classroom as well as design techniques for incorporating these practices into various levels of school curriculum and within a variety of subjects. Covering topics ranging from decomposition to robot learning, this book is ideal for educators, computer scientists, administrators, academicians, students, and anyone interested in learning more about how computational thinking, programming, and robotics can change the current education system.

Digital Technologies: Sustainable Innovations for Improving Teaching and Learning - Demetrios Sampson 2018-02-28 The aim of this volume entitled Digital Technologies: Sustainable Innovations for improving Teaching and Learning is to contribute in the global discussion on digital technologies as the means to foster sustainable educational innovations for improving the teaching, learning and assessment from K-12 to Higher Education. It compiles papers presented at the CELDA (Cognition and Exploratory Learning in the Digital Age) conference, which has as its goal continuing to address these challenges and promote the effective use of new tools and technologies to support teaching, learning and assessment. The book consists of four parts and showcases how emerging educational technologies and innovative practices have been used to address core global educational challenges; spanning from rethinking and transforming learning environments across educational contexts to effectively cultivating students’ competences for the digital smart society of the future. The book comprises Part I: Transforming the Learning Environment; Part II: Enriching student learning experiences; Part III: Measuring and Assessing Teaching and Learning with Educational Data Analytics; Part IV: Cultivating student competences for the digital Smart society. It targets researchers and research students, educational professional practitioners (including teachers, educators and education leaders) as well as education policy makers, who are interested in keeping up-to-date on the global development in this field.

Informatics in Schools: Focus on Learning Programming - Valentina Dagiené 2017-11-22 This book constitutes the refereed proceedings of the 10th International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, ISSEP 2017, held in Helsinki, Finland, in November 2017. The 18 full papers presented together with 1 invited talk were carefully reviewed and selected from 41 submissions. ISSEP presents this year a broad range of themes ranging from making informatics accessible to visually impaired students and computational thinking to context- and country specific challenges as well as teacher development and training.

Fostering 21st Century Digital Literacy and Technical Competency - Antonio Cartelli 2013-02-28 The 21st century has seen an expansion in digital technology and the ways in which it affects everyday life. These technologies have become essential in the growth of social communication and mass media. Fostering 21st Century Digital Literacy and Technical Competency offers the latest in research on the technological advances on computer proficiency in the educational system and society. This collection of research brings together theories and experiences in order to create a common framework and is essential for educators and professionals in the technology fields.

Informatics in Schools: Improvement of Informatics Knowledge and Perception - Andrej Brodnik 2016-09-21 This book constitutes the refereed proceedings of the 9th International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, ISSEP 2016, held in Münster, Germany, in October 2015. The 17 full papers presented together with 1 invited talk were carefully reviewed and selected from 50 submissions. The focus of the conference was on following topics: sustainable education in informatics for pupils of all ages; connecting informatics lessons to the students’ everyday lives; teacher education in informatics or computer science; and research on informatics or computer science in schools (empirical/qualitative/quantitative/theory building/research methods/comparative studies/transferability of methods and results from
other disciplines).

**Informatics in Schools: Contributing to 21st Century Education** - Ivan Kalas 2011-10-12 This book constitutes the refereed proceedings of the 5th International Conference on Informatics in Schools: Situation, Evolution and Perspectives, ISSEP 2011, held in Bratislava, Slovakia, in October 2011. The 20 revised full papers presented were carefully reviewed and selected from 69 submissions. A broad variety of topics related to teaching informatics in schools is addressed ranging from national experience reports to pedagogical and methodological issues. The papers are organized in topical sections on informatics education - the spectrum of options, national perspectives, outreach programmes, teacher education, informatics in primary schools, advanced concepts of informatics in schools, as well as competitions and exams.

**Report of a Workshop on the Scope and Nature of Computational Thinking** - National Research Council 2010-04-20 Report of a Workshop on the Scope and Nature of Computational Thinking presents a number of perspectives on the definition and applicability of computational thinking. For example, one idea expressed during the workshop is that computational thinking is a fundamental analytical skill that everyone can use to help solve problems, design systems, and understand human behavior, making it useful in a number of fields. Supporters of this viewpoint believe that computational thinking is comparable to the linguistic, mathematical and logical reasoning taught to all children. Various efforts have been made to introduce K-12 students to the most basic and essential computational concepts and college curricula have tried to provide a basis for life-long learning of increasingly new and advanced computational concepts and technologies. At both ends of this spectrum, however, most efforts have not focused on fundamental concepts. The book discusses what some of those fundamental concepts might be. Report of a Workshop on the Scope and Nature of Computational Thinking explores the idea that as the use of computational devices is becoming increasingly widespread, computational thinking skills should be promulgated more broadly. The book is an excellent resource for professionals in a wide range of fields including educators and scientists.

**Optimization and Decision Science: Methodologies and Applications** - Antonio Sforza 2017-11-03 This proceedings volume highlights the state-of-the-art knowledge related to optimization, decisions science and problem solving methods, as well as their application in industrial and territorial systems. It includes contributions tackling these themes using models and methods based on continuous and discrete optimization, network optimization, simulation and system dynamics, heuristics, metaheuristics, artificial intelligence, analytics, and also multiple-criteria decision making. The number and the increasing size of the problems arising in real life require mathematical models and solution methods adequate to their complexity. There has also been increasing research interest in Big Data and related challenges. These challenges can be recognized in many fields and systems which have a significant impact on our way of living: design, management and control of industrial production of goods and services; transportation planning and traffic management in urban and regional areas; energy production and exploitation; natural resources and environment protection; homeland security and critical infrastructure protection; development of advanced information and communication technologies. The chapters in this book examine how to deal with new and emerging practical problems arising in these different fields through the presented methodologies and their applications. The chapter topics are applicable for researchers and practitioners working in these areas, but also for the operations research community. The contributions were presented during the international conference “Optimization and Decision Science” (ODS2017), held at Hilton Sorrento Palace Conference Center, Sorrento, Italy, September 4 – 7, 2017. ODS 2017, was organized by AIRO, Italian Operations Research Society, in cooperation with DIETI (Department of Electrical Engineering and Information Technology) of University “Federico II” of Naples.

**Non-Formal and Informal Science Learning in the ICT Era** - Michail Giannakos 2020-09-14 This book introduces the reader to evidence-based non-formal and informal science learning considerations (including technological and pedagogical innovations) that have emerged in and
empowered the information and communications technology (ICT) era. The contributions come from diverse countries and contexts (such as hackerspaces, museums, makerspaces, after-school activities) to support a wide range of educators, practitioners, and researchers (such as K-12 teachers, learning scientists, museum curators, librarians, parents, hobbyists). The documented considerations, lessons learned, and concepts have been extracted using diverse methods, ranging from experience reports and conceptual methods to quantitative studies and field observation using qualitative methods. This volume attempts to support the preparation, set-up, implementation, but also evaluation of informal learning activities to enhance science education.

Informatics in Schools. Curricula, Competences, and Competitions—Andrej Brodnik 2015-09-23 This book constitutes the refereed proceedings of the 8th International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, ISSEP 2015, held in Ljubljana, Slovenia, in September/October 2015. The 14 full papers presented together with 3 invited talks were carefully reviewed and selected from 36 submissions. The focus of the conference was on following topics: sustainable education in informatics for pupils of all ages; connecting informatics lessons to the students’ everyday lives; teacher education in informatics; and research on informatics in schools (empirical/qualitative/quantitative/theory building/research methods/comparative studies/transferability of methods and results from other disciplines).

Informatics in Schools. Teaching and Learning Perspectives—Yasemin Gülbahar 2014-09-15 This book constitutes the refereed proceedings of the 7th International Conference on Informatics in Schools: Situation, Evolution, and Perspectives, ISSEP 2014, held in Istanbul, Turkey, in September 2014. The 13 full papers presented together with 2 keynotes were carefully reviewed and selected from 33 submissions. The focus of the conference was on following topics: Competence Science Education, Competence Measurement for Informatics, Emerging Technologies and Tools for Informatics, Teacher Education in Informatics, and Curriculum Issues.

Informatics in Schools. Engaging Learners in Computational Thinking—Külli Kori 2020-11-05 This book constitutes the proceedings of the 13th International Conference on Informatics in Schools: Situation, Evolution and Perspectives, ISSEP 2020, held in Tallinn, Estonia, in November 2020. Due to COVID-19 related travelling restrictions the conference had to be switched to online format. The 18 revised full papers presented were carefully reviewed and selected from 53 submissions. They are organized in topical sections named: Tasks for Informatics Competitions; Engagement and Gender Issues in School Informatics; Informatics Teacher Education; Curriculum and Pedagogical Issues.
Current Trends and Future Practices for Digital Literacy and Competence-Cartelli, Antonio 2012-04-30 "This book offers a look at the latest research within digital literacy and competence, setting the bar for the digital citizen of today and tomorrow"--Provided by publisher.

Smart Learning Objects for Smart Education in Computer Science-Vytautas Štuikys 2015-05-31 This monograph presents the challenges, vision and context to design smart learning objects (SLOs) through Computer Science (CS) education modelling and feature model transformations. It presents the latest research on the meta-programming-based generative learning objects (the latter with advanced features are treated as SLOs) and the use of educational robots in teaching CS topics. The introduced methodology includes the overall processes to develop SLO and smart educational environment (SEE) and integrates both into the real education setting to provide teaching in CS using constructivist and project-based approaches along with evaluation of pedagogic outcomes. Smart Learning Objects for Smart Education in Computer Science will appeal to researchers in CS education particularly those interested in using robots in teaching, course designers and educational software and tools developers. With research and exercise questions at the end of each chapter students studying CS related courses will find this work informative and valuable too.

Hacking Europe-Gerard Alberts 2014-09-03 Hacking Europe traces the user practices of chopping games in Warsaw, hacking software in Athens, creating chaos in Hamburg, producing demos in Turku, and partying with computing in Zagreb and Amsterdam. Focusing on several European countries at the end of the Cold War, the book shows the digital development was not an exclusively American affair. Local hacker communities appropriated the computer and forged new cultures around it like the hackers in Yugoslavia, Poland and Finland, who showed off their tricks and creating distinct “demoscenes.” Together the essays reflect a diverse palette of cultural practices by which European users domesticated computer technologies. Each chapter explores the mediating actors instrumental in introducing and spreading the cultures of computing around Europe. More generally, the “ludological” element--the role of mischief, humor, and play--discussed here as crucial for analysis of hacker culture, opens new vistas for the study of the history of technology.

Smart STEM-Driven Computer Science Education-Vytautas Štuikys 2018-06-28 At the centre of the methodology used in this book is STEM learning variability space that includes STEM pedagogical variability, learners’ social variability, technological variability, CS content variability and interaction variability. To design smart components, firstly, the STEM learning variability space is defined for each component separately, and then model-driven approaches are applied. The theoretical basis includes feature-based modelling and model transformations at the top specification level and heterogeneous meta-programming techniques at the implementation level. Practice includes multiple case studies oriented for solving the task prototypes, taken from the real world, by educational robots. These case studies illustrate the process of gaining interdisciplinary knowledge pieces identified as S-knowledge, T-knowledge, E-knowledge, M-knowledge or integrated STEM knowledge and evaluate smart components from the pedagogical and technological perspectives based on data gathered from one real teaching setting. Smart STEM-Driven Computer Science Education: Theory, Methodology and Robot-based Practices outlines the overall capabilities of the proposed approach and also points out the drawbacks from the viewpoint of different actors, i.e. researchers, designers, teachers and learners.

Information and Software Technologies-Robertas Damaševičius 2017-09-22 This book constitutes the refereed proceedings of the 23nd International Conference on Information and Software Technologies, ICIST 2017, held in Druskininkai, Lithuania, in October 2017. The 51 papers presented were carefully reviewed and selected from 135 submissions. The papers are organized in topical sections on information systems; business intelligence for information and software systems; software engineering; information technology applications.
Learning across Contexts in the Knowledge Society - Ola Erstad
2016-02-10 Developments within the “knowledge society,” especially those resulting from technological innovation, have intensified an interest in the relationship between different contexts and multiple sites of learning across what is often termed as formal, non-formal and informal learning environments. The aim of this book is to trace learning and experience across multiple sites and contexts as a means to generate new knowledge about the borders and edges of different practices and the boundary crossings these entail in the learning lives of young people in times of dynamic societal, environmental, economic, and technological change. The empirical research discussed in this book has grown out of a Nordic network of researchers. The research initiatives in the Nordic countries tend to avoid the more spectacular debates over the future of the educational institutions that tend to dominate and obscure discussions on education in the knowledge society, and which look to models of informal learning, whether in the “learning communities” of workplaces and families or in the new socio-technical spaces of the Internet, as a source of alternative educational strategies. Rather, Nordic researchers more modestly ask whether it is possible to envisage new models of teaching and learning which take seriously both the responsibility to social justice and social wellbeing, which, at least rhetorically, underpinned a commitment to mass education of the 20th century, as well as to the radical challenges to traditional educational models offered by the new socio-technical spaces and practices of the 21st century.

Improving Computer Science Education - Djordje M. Kadijevich 2013
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 summarizes 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.

Theoretical Models of Learning and Literacy Development - Evan Ortlieb 2014-06-13 Theoretical Models of Literacy Development highlights the latest theoretical advances in reading, writing, and multiliteracy development. New models are discussed to account for the rapidly changing literacy scene, inclusive of the interdisciplinary nature of literacy and content area learning.

The Cambridge Handbook of Creativity across Domains - James C. Kaufman 2017-09-28 Creativity is of rising interest to scholars and laypeople alike. Creativity in the arts, however, is very different from creativity in science, business, sports, cooking, or teaching. This book brings together top experts in the field from around the world to discuss creativity across many different domains. Each chapter includes clear definitions, intriguing research, potential measures, and suggestions for development or future directions. After a broad discussion of creativity across different domains, subsequent chapters look deeper into those individual domains (traditional arts, sciences, business, newer domains, and everyday life) to explore how creativity varies when expressed in different ways. Ultimately, the book offers a future-looking perspective integrating the different variations of creativity across domains.

The Cambridge Handbook of Computing Education Research - Sally A. Fincher 2019-02-21 This Handbook describes the extent and shape of computing education research today. Over fifty leading researchers from academia and industry (including Google and Microsoft) have contributed chapters that together define and expand the evidence base. The foundational chapters set the field in context, articulate expertise from key disciplines, and form a practical guide for new researchers. They address what can be learned empirically, methodologically and theoretically from each area. The topic chapters explore issues that are of current interest, why they matter, and what is already known. They include discussion of motivational context, implications for practice, and open questions which might suggest future research. The authors provide an authoritative
introduction to the field and is essential reading for policy makers, as well as both new and established researchers.

Guide to Teaching Computer Science - Orit Hazzan 2020-08-05 This concise yet thorough textbook presents an active-learning model for the teaching of computer science. Offering both a conceptual framework and detailed implementation guidelines, the work is designed to support a Methods of Teaching Computer Science (MTCS) course, but may be applied to the teaching of any area of computer science at any level, from elementary school to university. This text is not limited to any specific curriculum or programming language, but instead suggests various options for lesson and syllabus organization. Fully updated and revised, the third edition features more than 40 new activities, bringing the total to more than 150, together with new chapters on computational thinking, data science, and soft concepts and soft skills. This edition also introduces new conceptual frameworks for teaching such as the MERge model, and new formats for the professional development of computer science educators. Topics and features: includes an extensive set of activities, to further support the pedagogical principles outlined in each chapter; discusses educational approaches to computational thinking, how to address soft concepts and skills in a MTCS course, and the pedagogy of data science (NEW); focuses on teaching methods, lab-based teaching, and research in computer science education, as well as on problem-solving strategies; examines how to recognize and address learners’ misconceptions, and the different types of questions teachers can use to vary their teaching methods; provides coverage of assessment, teaching planning, and designing a MTCS course; reviews high school teacher preparation programs, and how prospective teachers can gain experience in teaching computer science. This easy-to-follow textbook and teaching guide will prove invaluable to computer science educators within all frameworks, including university instructors and high school teachers, as well as to instructors of computer science teacher preparation programs.

Adventures Between Lower Bounds and Higher Altitudes - Hans-Joachim Böckenhauer 2018-09-04 This Festschrift volume is published in honor of Juraj Hromkovič on the occasion of his 60th birthday. Juraj Hromkovič is a leading expert in the areas of automata and complexity theory, algorithms for hard problems, and computer science education. The contributions in this volume reflect the breadth and impact of his work. The volume contains 35 full papers related to Juraj Hromkovič’s research. They deal with various aspects of the complexity of finite automata, the information content of online problems, stability of approximation algorithms, reoptimization algorithms, computer science education, and many other topics within the fields of algorithmics and complexity theory. Moreover, the volume contains a prologue and an epilogue of laudatios from several collaborators, colleagues, and friends.

Informatics in Schools. Rethinking Computing Education - Erik Barendsen 2021-11-03 This book constitutes the proceedings of the 14th International Conference on Informatics in Schools: Situation, Evolution and Perspectives, ISSEP 2021, held in Nijmegen, The Netherlands, in November 2020. Due to COVID-19 related travelling restrictions the conference had to be switched to online format. The 12 full papers presented were carefully reviewed and selected from 29 submissions. They are organized in topical sections named: Fostering Computational Thinking, Programming Education, Advancing Computing Education, and Teachers’ Professional Development.

Handbook of Research on Tools for Teaching Computational Thinking in P-12 Education - Kalogiannakis, Michail 2020-06-26 While the growth of computational thinking has brought new awareness to the importance of computing education, it has also created new challenges. Many educational initiatives focus solely on the programming aspects, such as variables, loops, conditionals, parallelism, operators, and data handling, divorcing computing from real-world contexts and applications. This decontextualization threatens to make learners believe that they do not need to learn computing, as they cannot envision a future in which they will need to use it, just as many see math and physics education as unnecessary.
The Handbook of Research on Tools for Teaching Computational Thinking in P-12 Education is a cutting-edge research publication that examines the implementation of computational thinking into school curriculum in order to develop creative problem-solving skills and to build a computational identity which will allow for future STEM growth. Moreover, the book advocates for a new approach to computing education that argues that while learning about computing, young people should also have opportunities to create with computing, which will have a direct impact on their lives and their communities. Featuring a wide range of topics such as assessment, digital teaching, and educational robotics, this book is ideal for academicians, instructional designers, teachers, education professionals, administrators, researchers, and students.

From Digital Natives to Digital Wisdom-Marc R. Prensky 2012-01-18 An expert perspective on 21st century education What can you learn on a cell phone? Almost anything! How does that concept fit with our traditional system of education? It doesn’t. Best-selling author and futurist Marc Prensky’s book of essays challenges educators to “reboot” and make the changes necessary to prepare students for 21st century careers and living. His “bottom-up” vision includes students’ ideas about what they need from teachers, schools, and education. Also featured are easy-to-do, high-impact classroom strategies that help students acquire “digital wisdom.“ This thought-provoking text is organized into two sections that address: Rethinking education (including what and how we teach and measuring learning) 21st century learning and technology in the classroom (including games, YouTube, and more)

Informatics in Schools. New Ideas in School Informatics-Sergei N. Pozdniakov 2019-11-11 This book constitutes the proceedings of the 12th International Conference on Informatics in Schools: Situation, Evolution and Perspectives, ISSEP 2019, held in Larnaca, Cyprus, in November 2019. The 23 revised full papers presented were carefully reviewed and selected from 55 submissions. They are organized in topical sections named: teacher education in informatics, primary education in informatics, contemporary computer science ideas in school informatics, teaching informatics: from highschool to university levels, contests, competitions and games in informatics.

Computer Supported Education-H. Chad Lane 2020-12-11 This book constitutes the thoroughly refereed proceedings of the 11th International Conference on Computer Supported Education, CSEDU 2019, held in Heraklion, Crete, Greece, in May 2019. The 30 revised full papers were carefully reviewed and selected from 202 submissions. The papers cover wide research fields including authoring tools and content development, AV-communication and multimedia, classroom management, e-Learning hardware and software, blended learning, critical success factors in distance learning.

Radical Solutions and eLearning-Daniel Burgos 2020-05-22 Educational Technology is the right couple to a radical innovation. Thanks to the appropriate technology in the right context with the best fit to the target audience, education can be drastically improved, meaning a better performance, competence achievement, match with the user’s expectations and with the market needs. Serious games, Virtual reality, Augmented reality, Remote labs, Online learning, Blockchain, Mobile learning and many other key technologies allow for a better explanation of so many subjects, and even more: for a complete student involvement and a full teacher engagement into the educational system. Technology gives another angle to the same content, provides the user with a personalised experience and pushes the limits of knowledge a little further, every time. This book presents a number of radical innovations through technology, from experienced cases studies, to be replicated and inspired by; a powerful resource handbook for cutting-edge education.

Innovative Teaching Strategies and New Learning Paradigms in Computer Programming-Ricardo Queirós 2014-11-30 Courses in computer programming combine a number of different concepts, from general problem-solving to mathematical precepts such as algorithms and computational intelligence. Due to the complex nature of computer science education, teaching the novice programmer can be a challenge. Innovative
Teaching Strategies and New Learning Paradigms in Computer Programming brings together pedagogical and technological methods to address the recent challenges that have developed in computer programming courses. Focusing on educational tools, computer science concepts, and educational design, this book is an essential reference source for teachers, practitioners, and scholars interested in improving the success rate of students.

Handbook of Research on Using Educational Robotics to Facilitate Student Learning—Papadakis, Stamatios 2020-12-05 Over the last few years, increasing attention has been focused on the development of children’s acquisition of 21st-century skills and digital competences. Consequently, many education scholars have argued that teaching technology to young children is vital in keeping up with 21st-century employment patterns. Technologies, such as those that involve robotics or coding apps, come at a time when the demand for computing jobs around the globe is at an all-time high while its supply is at an all-time low. There is no doubt that coding with robotics is a wonderful tool for learners of all ages as it provides a catalyst to introduce them to computational thinking, algorithmic thinking, and project management. Additionally, recent studies argue that the use of a developmentally appropriate robotics curriculum can help to change negative stereotypes and ideas children may initially have about technology and engineering. The Handbook of Research on Using Educational Robotics to Facilitate Student Learning is an edited book that advocates for a new approach to computational thinking and computing education with the use of educational robotics and coding apps. The book argues that while learning about computing, young people should also have opportunities to create with computing, which have a direct impact on their lives and their communities. It develops two key dimensions for understanding and developing educational experiences that support students in engaging in computational action: (1) computational identity, which shows the importance of young people’s development of scientific identity for future STEM growth; and (2) digital empowerment to instill the belief that they can put their computational identity into action in authentic and meaningful ways. Covering subthemes including student competency and assessment, programming education, and teacher and mentor development, this book is ideal for teachers, instructional designers, educational technology developers, school administrators, academicians, researchers, and students.