

# Table of Contents

## Informatics Education – The Spectrum of Options

|  |    |
|--|----|
| Wild Programming – One Unintended Experiment with Inquiry Based Learning .....                         | 1  |
| <i>Pavel Boytchev</i>  |    |
| Informatics Education for New Millennium Learners .....  | 9  |
| <i>Valentina Dagienė</i>   |    |
| Why Teaching Informatics in Schools Is as Important as Teaching Mathematics and Natural Sciences ..... | 21 |
| <i>Juraj Hromkovič and Björn Steffen</i>   |    |

## National Perspectives

|   |    |
|---|----|
| Informatics Education in Italian High Schools .....                                 | 31 |
| <i>Maria Carla Calzarossa, Paolo Ciancarini, Luisa Mich, and Nello Scarabottolo</i> |    |
| A Competence-Oriented Approach to Basic Informatics Education in Austria .....      | 43 |
| <i>Peter Micheuz</i>  |    |
| Outreach to Prospective Informatics Students .....                                  | 56 |
| <i>Maciej M. Sysło</i>  |    |

## Outreach Programs

|   |    |
|---|----|
| Overcoming Obstacles to CS Education by Using Non-programming Outreach Programmes ..... | 71 |
| <i>Tim Bell, Paul Curzon, Quintin Cutts, Valentina Dagienė, and Bruria Haberman</i>     |    |
| CS Unplugged Assisted by Digital Materials for Handicapped People at Schools .....      | 82 |
| <i>Hiroki Manabe, Susumu Kanemune, Mitaro Namiki, and Yoshiaki Nakano</i>               |    |
| Computer Science in Primary Schools – Not Possible, But Necessary?! .....               | 94 |
| <i>Ernestine Bischof and Barbara Sabitzer</i>   |    |

**Teacher Education**

Pre-service Computer Science Teacher Training within the Professional Development School (PDS) Collaboration Framework ..... 106  
*Noa Ragonis and Anat Oster-Levinz*

Teaching Theoretical Informatics to Secondary School Informatics Teachers ..... 117  
*Daniela Bezáková and Michal Winczer*

**Informatics in Primary Schools**

Informatics in Primary School: Principles and Experience ..... 129  
*Andrej Blaho and Ľubomír Salanci*

Teaching Programming at Primary Schools: Visions, Experiences, and Long-Term Research Prospects ..... 143  
*Giovanni Serafini*

Learning Algorithmic Thinking with Tangible Objects Eases Transition to Computer Programming ..... 155  
*Gerald Futschek and Julia Moschitz*

**Advanced Concepts of Informatics in Schools**

Transfer, Cognitive Load, and Program Design Difficulties ..... 165  
*David Ginat, Eyal Shifroni, and Eti Menashe*

Introductory Computing: The Design Discipline ..... 177  
*Viera Krňianová Proulx*

A Short Introduction to Classical Cryptology as a Way to Motivate High School Students for Informatics ..... 189  
*Lucia Keller, Barbara Scheuner, Giovanni Serafini, and Björn Steffen*

**Competitions and Exams**

Little Beaver – A New Bebras Contest Category for Children Aged 8–9 ..... 201  
*Monika Tomcsányiová and Peter Tomcsányi*

|  |     |
|--|-----|
| What's the Fun in Informatics? Working to Capture Children and Teachers into the Pleasure of Computing ..... | 213 |
| <i>Violetta Lonati, Mattia Monga, Anna Morpurgo, and Mauro Torelli</i>                                       |     |
| Criteria for Writing Exams Which Reflect the K12 CS Foundations Study Material .....                         | 225 |
| <i>Haim Averbuch, Tamar Benaya, and Ela Zur</i>  |     |
| <b>Author Index</b> .....  | 237 |