Contents

Part I  Introduction

1  Introduction ........................................................................................................................................... 3
   Christiane Benz, Birgit Brandt, Ulrich Kortenkamp, Götz Krummheuer, Silke Ladel and Rose Vogel

2  A Dance of Instruction with Construction in Mathematics Education .................................................. 9
   Norma Presmeg

Part II  Case Studies

3  It is quite confusing isn’t it? .................................................................................................................... 21
   Judy Sayers and Patti Barber

4  Mathematical Teaching Moments: Between Instruction and Construction ............................................... 37
   Troels Lange, Tamsin Meaney, Eva Riesbeck and Anna Wernberg

5  “I have a little job for you” ...................................................................................................................... 55
   Birgit Brandt

6  The Relationship between Cultural Expectation and the Local Realization of a Mathematics Learning Environment .................................................................................................................. 71
   Götz Krummheuer

7  The Reflection of Spatial Thinking on the Interactional Niche in the Family ........................................ 85
   Ergi Acar Bayraktar
Part III  Children’s Constructions

8  The Roots of Mathematising in Young Children’s Play .......................... 111  
   Bert van Oers

9  Non-canonical Solutions in Children-Adult Interactions—A  
   Case Study of the Emergence of Mathematical Creativity .................... 125  
   Melanie Münz

10 The Interplay Between Gesture and Speech: Second  
    Graders Solve Mathematical Problems ............................................. 147  
    Melanie Huth

11 Children’s Constructions in the Domain of Geometric  
    Competencies (in Two Different Instructional Settings)...................... 173  
    Andrea Simone Maier and Christiane Benz

12 Identifying quantities—Children’s Constructions to  
    Compose Collections from Parts or Decompose Collections  
    into Parts ....................................................................................... 189  
    Christiane Benz

Part IV  Tools and Interaction

13 Children’s Engagement with Mathematics in Kindergarten  
    Mediated by the Use of Digital Tools............................................... 207  
    P.S. Hundeland, M. Carlsen and I. Erfjord

14 Mathematical Situations of Play and Exploration as an  
    Empirical Research Instrument ....................................................... 223  
    Rose Vogel

15 Number Concepts—Processes of Internalization and  
    Externalization by the Use of Multi-Touch Technology ....................... 237  
    Silke Ladel and Ulrich Kortenkamp

Part V  Intervention

16 Intentional Teaching: Integrating the Processes of  
    Instruction and Construction to Promote Quality Early  
    Mathematics Education .................................................................... 257  
    Jie-Qi Chen and Jennifer McCray
17 Professionalization of Early Childhood Educators with a Focus on Natural Learning Situations and Individual Development of Mathematical Competencies: Results from an Evaluation Study ................................................................. 275
Hedwig Gasteiger

18 Employing the CAMTE Framework: Focusing on Preschool Teachers’ Knowledge and Self-efficacy Related to Students’ Conceptions ........................................................................................................ 291
Pessia Tsamir, Dina Tirosh, Esther Levenson, Michal Tabach and Ruthi Barkai

19 Early Enhancement of Kindergarten Children Potentially at Risk in Learning School Mathematics—Design and Findings of an Intervention Study .................................................................................. 307
Andrea Peter-Koop and Meike Grüßing

Index .................................................................................................................. 323
Early Mathematics Learning
Selected Papers of the POEM 2012 Conference
Kortenkamp, U.; Brandt, B.; Benz, C.; Krummheuer, G.;
Ladel, S.; Vogel, R. (Eds.)
2014, XI, 326 p. 99 illus., 30 illus. in color., Hardcover
ISBN: 978-1-4614-4677-4