

- | | |
|-------------------------|---|
| 1. Record Nr. | UNIORUON00345431 |
| Autore | KOEPPEN, Wolfgang |
| Titolo | Jugend / Wolfgang Koeppen |
| Pubbl/distr/stampa | Frankfurt am Main, : Suhrkamp, 1987 |
| ISBN | 35-18-01500-1 |
| Descrizione fisica | 146 p. ; 18 cm. |
| Disciplina | 833.91 |
| Lingua di pubblicazione | Tedesco |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| 2. Record Nr. | UNINA9911020149003321 |
| Autore | Guille-Biel Winder Claire |
| Titolo | Articulations Between Tangible Space, Graphical Space and Geometrical Space : Resources, Practices and Training |
| Pubbl/distr/stampa | Wiley-Blackwell, 2023
Newark : , : John Wiley & Sons, Incorporated, , 2023
©2023 |
| ISBN | 9781394229598
1394229593
9781394229604
1394229607
9781394229581
1394229585 |
| Descrizione fisica | 1 online resource (342 pages) |
| Altri autori (Persone) | AssudeTeresa |
| Soggetti | Geometry
Educational technology |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |

Cover -- Title Page -- Copyright Page -- Contents -- Preface -- Part 1. Articulations between Tangible Space, Graphical Space and Geometric Space -- Chapter 1. The Geometry of Tracing, a Possible Link Between Geometric Drawing and Euclid's Geometry? -- 1.1. Introduction -- 1.2. Geometry in middle school -- 1.2.1. What underlying axiomatics? -- 1.2.2. An example -- 1.2.3. The current lack of consistency -- 1.3. Geometry of tracing, a possible link between material geometry and Euclid's geometry? -- 1.3.1. Figure visualization and figure restoration -- 1.3.2. The geometrical use of tracing instruments, a first step to make sense to an axiomatic -- 1.3.3. Distinguishing between the hypothesis and the conclusion -- 1.3.4. Restoration, description, construction of figures and geometric language -- 1.4. Dialectics of action, formulation and validation with regards to the reproduction of figures with instruments -- 1.4.1. Formulation situations and possible variations -- 1.4.2. Validation situations -- 1.5. From tracing to the characterization of objects and geometric relationships -- 1.5.1. On the concepts of segments, lines and points -- 1.5.2. On the notion of perpendicular lines -- 1.6. Towards proof and validation situations in relation to figure restoration -- 1.6.1. Equivalence between two construction programs and the need for proof -- 1.6.2. Validation situations involving programs for the construction of a square and introducing a proof process -- 1.7. Conclusion -- 1.8. References -- Chapter 2. How to Operate the Didactic Variables of Figure Restoration Problems? -- 2.1. Introduction -- 2.2. Theoretical framework -- 2.2.1. Studying a specific type of problem: figure restoration -- 2.2.2. Studying the concepts involved in figure restoration problems -- 2.3. Values of the didactic variables of the first problem family. 2.3.1. Values of the didactic variables for the "figure" and the "beginning of the figure" -- 2.3.2. Value for the didactic variable "instruments made available" -- 2.3.3. Rules of action and theorems-in-action associated with development on the geometrical usage of the ruler -- 2.4. Conclusion -- 2.5. References -- Chapter 3. Early Geometric Learning in Kindergarten: Some Results from Collaborative Research -- 3.1. The emergence of the first questions -- 3.2. Theoretical insights -- 3.2.1. Global understanding and visual perception of geometric shapes -- 3.2.2. Operative understanding and visual perception of geometric shapes -- 3.2.3. Topological understanding and visual perception of geometric shapes -- 3.2.4. Haptic perception -- 3.2.5. Association of visual and haptic perceptions: towards a sequential understanding of geometric shapes -- 3.3. The role of language in early geometric learning -- 3.3.1. But which lexicon? -- 3.3.2. Verbal and gestural language -- 3.4. Assembling shapes -- 3.4.1. Free assembly of shapes -- 3.4.2. Assembling triangles -- 3.5. Gestures to learn -- 3.6. Conclusion -- 3.7. References -- Chapter 4. Using Coding to Introduce Geometric Properties in Primary School -- 4.1. Coding in geometry -- 4.2. Two examples of communication activities requiring the use of coding -- 4.2.1. A co-constructed coding -- 4.2.2. Personal coding -- 4.3. Conclusion: perspectives on the introduction of coding in geometry -- 4.4. References -- Chapter 5. Freehand Drawing for Geometric Learning in Primary School -- 5.1. Introduction -- 5.2. Drawings in geometry and their functions -- 5.3. Freehand drawing in research -- 5.4. Exploring the milieu around a freehand reproduction task of the Mitsubishi symbol on a blank white page -- 5.4.1. Freehand drawing reveals a reasoning between spatial knowledge and geometric knowledge. 5.4.2. Freehand drawing as a dynamic process to build and transform knowledge -- 5.5. Conclusion -- 5.6. References -- Part 2. Resources

and Artifacts for Teaching -- Chapter 6. Use of a Dynamic Geometry Environment to Work on the Relationships Between Three Spaces (Tangible, Graphical and Geometrical) -- 6.1. Added value with a dynamic geometry environment: the ecological and economical point of view -- 6.2. Tangible space, graphical space and geometric space -- 6.3. Designing situations for first grade primary school -- 6.3.1. Our choices for designing situations -- 6.3.2. Presentation of situations -- 6.4. Analysis of the situations for the first-grade class -- 6.4.1. Instrumental dimension: perceptive-gestural level -- 6.4.2. Instrumental dimension: spatial-geometric relationships -- 6.4.3. Instrumental dimension: exploration and graphical space -- 6.4.4. Instrumental dimension: tool-geometric space symbiosis -- 6.4.5. Praxeological dimension -- 6.4.6. Praxeological dimension: observe and describe -- 6.5. Conclusion -- 6.6. References -- Chapter 7. Robotics and Spatial Knowledge -- 7.1. Introduction -- 7.2. Theoretical framework and development for a categorization of spatial tasks -- 7.2.1. Spatial knowledge -- 7.2.2. Types of spatial tasks -- 7.2.3. Types of tasks and techniques -- 7.3. Research methodology -- 7.4. Analysis: reproducing an assembly -- 7.4.1. Test item -- 7.4.2. Test results -- 7.4.3. Analysis of the results -- 7.5. Conclusion -- 7.6. References -- Chapter 8. Contribution of a Human Interaction Simulator to Teach Geometry to Dyspraxic Pupils -- 8.1. Introduction -- 8.2. General research framework -- 8.2.1. Teaching geometry -- 8.2.2. Dyspraxia and consequences for geometry -- 8.3. What alternatives are there for teaching geometry? -- 8.3.1. Using tools in a digital environment -- 8.3.2. Dyadic work arrangement. 8.4. Designing the human interaction simulator -- 8.4.1. General considerations -- 8.4.2. Choice of instrumented actions -- 8.4.3. Interaction choices -- 8.4.4. Ergonomic considerations -- 8.5. Initial experimental results -- 8.5.1. Data collected -- 8.5.2. Jim's diagnostic evaluation -- 8.5.3. Analysis of the first experimentation -- 8.5.4. Conclusion -- 8.6. References -- Chapter 9. Research and Production of a Resource for Geometric Learning in First and Second Grade -- 9.1. Presentation of the ERMEL team's research on spatial and geometric learning from preschool to second grade -- 9.1.1. Origins of the research -- 9.1.2. Introduction to the chapter -- 9.2. Learning to trace straight lines -- 9.2.1. Significance of the straight line -- 9.2.2. Initial hypotheses -- 9.2.3. The RAYURE situation -- 9.2.4. Using straight lines -- 9.2.5. A few summary elements -- 9.3. Plane and solid figures -- 9.3.1. Findings and assumptions -- 9.3.2. The SQUARE AND QUASI-SQUARE situation -- 9.3.3. The emergence of criteria for comparing solids: the IDENTIFYING A SOLID situation -- 9.3.4. Identification of cube properties: the CUBE AND QUASI-CUBE situation -- 9.3.5. Progression on solids and plane figures -- 9.4. The appropriation of research results by the resource -- 9.5. Conclusion -- 9.6. References -- Chapter 10. Tool for Analyzing the Teaching of Geometry in Textbooks -- 10.1. General framework and theoretical tools -- 10.1.1. Didactic co-determination scale, mathematical and didactic organizations -- 10.1.2. Reference MO and theoretical tools for analysis -- 10.2. Analysis criteria: definition and methodology -- 10.2.1. Institutional conformity -- 10.2.2. Educational adequacy -- 10.2.3. Didactic quality -- 10.3. Introducing the analysis grid -- 10.3.1. Analysis of tasks and task types -- 10.3.2. Analysis of techniques -- 10.3.3. Analysis of knowledge. 10.3.4. Analysis of ostensives -- 10.3.5. Analysis of organizational and planning elements -- 10.3.6. Summary -- 10.4. Conclusion -- 10.5. References -- Part 3. Teaching Practices and Training Issues -- Chapter 11. Study on Teacher Appropriation of a Geometry Education Resource

-- 11.1. Introduction -- 11.2. Research background -- 11.2.1. Study on dissemination possibilities in ordinary education -- 11.2.2. Resource design approach -- 11.2.3. A working methodology based on assumptions -- 11.2.4. Designing a situation using the didactic engineering approach for development -- 11.3. Focus on the adaptability of this situation to ordinary education -- 11.3.1. Details about the theoretical framework and the research question -- 11.3.2. Presentation on the follow-up of teachers, details of the research question and the methodology -- 11.3.3. Presentation of the analysis methodology -- 11.4. Elements of the analysis -- 11.4.1. Analysis a priori of the situation and anticipatory analysis of the teacher's activity -- 11.4.2. Analysis of practices -- 11.5. Conclusion -- 11.6. References -- Chapter 12. Geometric Reasoning in Grades 4 to 6, the Teacher's Role: Methodological Overview and Results -- 12.1. Introduction -- 12.2. Theoretical choices and the problem statement -- 12.2.1. Geometrical paradigms -- 12.2.2. The different spaces -- 12.2.3. Study on reasoning -- 12.2.4. The role of the teacher -- 12.2.5. Problem statement -- 12.3. Methodology -- 12.3.1. General principle -- 12.3.2. The situations -- 12.3.3. Analysis methodology -- 12.4. Conclusion -- 12.5. References -- Chapter 13. When the Teacher Uses Common Language Instead of Geometry Lexicon -- 13.1. Introduction -- 13.2. An attempt to categorize the uses of common vernacular terms in place of geometry lexicon terms within teacher discourse -- 13.2.1. The phenomenon of didactic reticence. 13.2.2. The phenomenon of semantic analogy: comparison with common concepts to construct meaning for mathematical knowledge.

Sommario/riassunto

This book explores the interconnections between tangible space, graphical space, and geometrical space, particularly in educational contexts. It delves into the theoretical and practical aspects of geometric learning, from middle school to kindergarten, emphasizing the role of figure restoration and the use of geometric tools. The authors, Claire Guille-Biel Winder and Teresa Assude, aim to enhance understanding and teaching of geometry by exploring different dimensions of space and incorporating modern educational practices such as coding. The book targets educators and researchers in mathematics education, providing insights into geometric drawing, the axiomatic foundations of geometry, and the integration of coding in teaching geometry.
