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Nota di contenuto	Intro -- Preface -- Contents -- Chapter 1: Theoretical Perspectives on Complex Systems in Biology Education -- 1.1 Introduction -- 1.2 Systems Dynamics and Systems Thinking -- 1.3 From Structure, Behavior, Function to Phenomena-Mechanisms-Components -- 1.4 Agent-Based Modeling -- 1.5 Thinking in Levels -- 1.6 Conclusion -- References -- Chapter 2: Long Term Ecological Research as a Learning Environment: Evaluating Its Impact in Developing the Understanding of Ecological Systems Thinking - A Case Study -- 2.1 Introduction -- 2.2 Literature Review -- 2.2.1 The Ecosystem as Complex System -- 2.2.2 The Difficulties Associated with Understanding Complex Ecological Systems -- 2.2.3 Developing and Assessing System Thinking -- 2.3 Methods -- 2.3.1 Setting and Population -- 2.3.2 Research Tools and Data Analysis -- 2.4 Results -- 2.4.1 Analysis Level -- 2.4.2 Synthesis Level -- 2.4.3 Implementation Level -- 2.4.4 Students' Understanding of the Content and the Value of LTER -- 2.5 Discussion -- References -- Chapter 3: Involving Teachers in the Design Process of a Teaching and Learning Trajectory to Foster Students' Systems

and Learning: What Is Used to Support Instruction and Learning? -- 11.2.4 Content Expertise: What Is the Knowledge to Be Learned? -- 11.3 Designing for Teacher PD -- 11.3.1 Face-to-Face PD: Exploring Teacher Learning and Community Development -- 11.3.2 Online Asynchronous PD: Exploring How to Scale BioGraph Resources -- 11.4 Research Findings -- 11.4.1 Students Improve in Biology and Complex Systems Understanding -- 11.4.2 Students Understanding of Biology as a Coherent Set of Ideas Improves -- 11.4.3 Teachers Indicate High Usability in their Biology Courses -- 11.4.4 Developing Teacher's Social Capital Is Key.
11.5 Benefits of Computer-Supported Complex Systems Curricula and Lessons Learned.