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Sommario/riassunto	This monograph focuses on the design of personalized and adaptive online interactive learning environment (OILE) to enhance students' learning in and about complex dynamic systems (CDS). Numerous studies show that students experience difficulties when learning in and about CDS. The difficulties are due to challenges originating from a) the structural complexity of CDS, (b) the production of dynamic behavior from the underlying systems structure, and (c) methods, techniques and tools employed in the analysis of such systems. Despite the fact that studies have uncovered such learning challenges, it is still not well understood how we may effectively address these challenges. In this monograph, the authors provide some answers as to how we may best

improve our cognitive capabilities to meet these challenges by way of effective instructional methods, techniques, and tools and their implementation in the form of an OILE. The OILE developed for this purpose, builds on a five-step holistic instructional design framework; identification of instructional design models, identification of authentic learning material, identification of instructional methods, identification of instructional techniques, and design of the interface and implementation of the tool. In this OILE development, six well-documented instructional design models were considered; a four component instructional design, first principles of instruction, constructivists learning environment, task centered instruction, cognitive apprenticeship, and elaboration theory.