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The Acquisition of Knowledge and Skills for Taskwork and Teamwork to Control Complex Technical Systems

A Cognitive and Macroergonomics Perspective

- Introduces a new theoretical framework to understand the learning process of a complex task from a Human Factors perspective
- Integrates theoretical approaches of individual skill acquisition and adult learning into a new comprehensive framework for real-world tasks in control rooms of High Reliability Organizations (HROs)
- Bridges the gap between traditional learning theory and the training development for workers dealing with highly complex technical systems

This book provides the first comprehensive literature review on the acquisition and retention of complex skills in High Reliability Organizations. Based on this review, it introduces a theoretical model of how skill and knowledge acquisition for complex tasks is accomplished and shows how this model can be used to derive training methods and instructional techniques. Successful acquisition and retention of complex technical skills within High Reliability Organizations requires a full understanding of the learning process, knowledge structure, and skill requirements associated with the effective operation and management of technology. For researchers and for organizations, the understanding of these processes is vital for designing training programs as well as for reducing errors with severe consequences for human lives and the environment. Until now, only theoretical fragments exist on this topic, and only a very limited number of publications actually address complex tasks in vocational/occupational settings. "The Acquisition of Knowledge and Skills for Task Work and Teamwork to Control Complex Technical Systems" uses its literature overview and theoretical model to formulate training principles, that can be used to develop training experiments for further empirical investigations as well as training methods for applied organizational contexts.