



If the field of cognitive science is to truly understand how the human mind works, researchers need to integrate the many theories about memory, language, problem solving, and other mental functions. Anderson is best known for his efforts toward the development of such a unified theory of cognition. The latest in his series of Adaptive Control of Thought (ACT) cognitive models is ACT-R, a computational system that simulates human cognition using assumptions derived from psychological experiments. With such efforts, Anderson has combined traditional mechanistic approaches that focus on explaining what happens inside the brain with rational analysis (the “R” in ACT-R) that explains cognitive processes as adaptations to the structure of the environment.

The ACT theory has served as the basis for a series of intelligent tutoring systems called “cognitive tutors.” These tutoring systems provide students with interactive instruction in mathematics, providing customized feedback that guides users as they work through problems and learn. The early tutoring systems developed under Anderson’s guidance produced striking results, with students learning faster and receiving better grades than those who received regular instruction. In 1998, a company was spun off from this research, and now hundreds of thousands of students benefit from these interactive systems.