

Practical Application: Architecting Human Performance in High-Stakes Environments

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Scenario: The Performance Gap in Trauma Triage

I currently serve as a Senior Instructional Design Consultant and Sergeant Major within the United States Army Medical Command (MEDCOM). Our organization provides a full spectrum of instructional design, program evaluation, and performance consulting services to military medical training centers. We specialize in transforming complex medical protocols into scalable, highly effective training programs for combat medics (MOS 68W) and behavioral health specialists.

Presently, our lead training director at a regional simulation center has identified a critical performance issue. Newly assigned combat medics are consistently failing to execute rapid triage protocols effectively during mass casualty (MASCAL) field training exercises. While these medics score above 90% on their written cognitive exams regarding triage categories, their time-to-intervention in simulated, high-stress environments is unacceptably slow. They are hesitating, misprioritizing patients, and experiencing cognitive overload, leading to critical delays in care. Unit leadership suspects a foundational knowledge gap and has formally requested that my team develop a new suite of comprehensive PowerPoint lectures and multiple-choice exams to "retrain" the medics on triage doctrine. My role as the lead Instructional Designer is to evaluate this request, identify the true root causes of the performance failure, and architect an instructional or non-instructional solution that directly resolves the behavioral gap.

Applying Instructional Design Competencies to Resolve the Problem

The problem I am facing is a classic disconnect between theoretical knowledge acquisition and practical application under stress. Overall, my approach to developing a solution rejects the immediate assumption that "more lectures" will fix a behavioral performance issue. Instead, I will systematically apply a Human Performance Technology (HPT) framework to diagnose the environment, followed by the design of an immersive, scenario-based learning intervention.

Front-End Analysis (FEA) and Needs Assessment.

The most important competencies I have developed and will apply to this problem begin with Front-End Analysis (FEA) and Needs Assessment. When stakeholders request training to solve a problem, it is the instructional designer's responsibility to verify if training is actually the correct intervention. Applying frameworks such as Gilbert's Behavior Engineering Model (BEM), I will conduct a gap analysis to separate actual performance barriers from perceived symptoms. By observing the MASCAL simulations and interviewing the medics, I can determine that this is not a knowledge deficit, the medics know the triage algorithms. Instead, the gap is rooted in environmental design and a lack of psychological safety; they are suffering from decision paralysis because they have never been allowed to practice these skills in a "safe failure" environment prior to high-stakes field evaluations.

Designing Scenario-Based Instruction.

Having identified the true need, I will apply my competency in Designing Scenario-Based Instruction. To bridge the gap between classroom theory and field execution, I will design a

structured, interactive learning experience utilizing the PACT (Parameterize, Act, Consequence, Think) instructional model. Drawing upon David Merrill's First Principles of Instruction, the solution must be problem centered. I will architect a digital, immersive triage simulation, potentially leveraging virtual environments like CoSpaces or AI-driven conversational agents, where medics must rapidly categorize patients based on dynamic visual and auditory cues. This simulation will feature branching decision pathways, forcing the learner to make a choice, experience the immediate simulated consequence of that choice (e.g., patient deterioration), and engage in a non-skippable metacognitive reflection on why their protocol succeeded or failed. This effectively scaffolds their cognitive load, moving them from guided practice to autonomous execution.

Project Management and Implementation

To ensure this solution is sustainable, I will leverage my competency in Project Management and Implementation. Designing a simulation is only half the battle; integrating it into a rigid military training schedule requires strategic execution. I will develop a comprehensive project management plan that defines a strict critical path for development, secures buy-in from the medical instructors, and establishes clear protocols for how the simulation will be facilitated. This includes creating job aids and rubrics for the instructors so they can accurately debrief the medics post-simulation, ensuring the technology serves as a tool for deeper social learning rather than a standalone gimmick.

Evaluation

Finally, I will apply my competency in Evaluation. To prove the return on investment and validate the instructional effectiveness, I will design a multi-tiered evaluation plan based on Kirkpatrick's framework. Formative evaluation will occur during the prototype phase, utilizing "think-aloud" protocols with a small sample of medics to identify usability issues and refine the simulation's cognitive load. Summative evaluation will extend beyond measuring learner satisfaction; I will analyze extant data from subsequent live MASCAL field exercises to measure the actual behavioral change, specifically, tracking the reduction in time-to-intervention and the accuracy of triage categorization under live-action stress.

Summary of Knowledge Gains

The knowledge gains from my coursework have profoundly shaped my thinking, planning, and acting in resolving complex performance problems. Courses focused on the principles of instruction and learning theories expanded my understanding beyond traditional behaviorism, highlighting the critical importance of Social Learning Theory and constructivism in developing professional judgment. I learned that adult learners, especially in high-stakes environments, construct knowledge through shared experience, modeling, and iterative reflection. Furthermore, my deep dive into Front-End Analysis rewired how I plan interventions. I no longer accept organizational requests for "more training" at face value. I have learned to rigorously investigate the suprasystems and subsystems of an organization, looking for conflicting metrics, workflow friction, and environmental barriers before drafting a single learning objective. Additionally, my exposure to educational technologies and evaluation techniques provided me

with the practical tools to act. Whether architecting branching logic in an interactive module or drafting a rigorous usability testing protocol, I now possess the technical and analytical vocabulary to build and measure sophisticated learning environments.

Professional Identity and Reflection

As a graduate of this program, my professional identity has evolved from an experienced military leader and behavioral health practitioner into a strategic Instructional Systems Designer and Human Performance Technologist. While leadership relies heavily on intuition and experience, instructional design relies on systematic, evidence-based engineering. I view my role as the bridge between operational necessity and the learning sciences.

My new competencies are vital to my chosen professional context because, in military medicine and large-scale organizational training, the stakes are uncompromisingly high. Poor instructional design in these arenas does not just result in a failed test; it results in critical operational failures. Tracking my competencies and continuously refining my ability to conduct root-cause analyses, architect immersive simulations, and manage complex educational projects ensures that I am delivering solutions that truly optimize human potential. These skills empower me to engineer learning environments that cultivate not just technical proficiency, but the adaptive expertise and ethical clarity required to thrive in unpredictable environments.

References

Bandura, A. (1977). *Social learning theory*. Prentice-Hall.

Gilbert, T. F. (2007). *Human competence: Engineering worthy performance* (Tribute ed.). Pfeiffer.

Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). *Evaluating training programs: The four levels* (3rd ed.). Berrett-Koehler Publishers.

Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research and Development*, 50(3), 43–59. <https://doi.org/10.1007/BF02505024>

Project Management Institute. (2021). *A guide to the project management body of knowledge (PMBOK guide)* (7th ed.). Project Management Institute.

Scott, B., Wilson, D., Vasquez, G., & Tidwell, G. (2026). *Architecting financial literacy: The PACT model* [Unpublished manuscript]. Department of Instructional Design, Development and Evaluation, Syracuse University.

Wilson, D. (2025). *01DEC2025 Competencies Assessment* [Unpublished self-evaluation]. Department of Instructional Design, Development and Evaluation, Syracuse University.