Why Can’t Engineering Students Grasp the Concept of Heuristics?

Hugh D. Lester

Urbahn Architects, PLLC; Stevens Institute of Technology

Construction Engineering II, taught during the Fall 2016, Spring 2017, and Fall 2017 semesters, ostensibly provided Built Environment program students at Stevens an overview of engineering methods. The text—Discussion of the Method: Conducting the Engineer’s Approach to Problem Solving by Billy Vaughn Koen—outlines the heuristic-based reasoning used by engineers to both create and ultimately understand the world we engineer. Despite the instructor’s best efforts, students proved unable to intuit the heuristic as a concept, nor were they able to integrate it into their professional or world views, operationalizing it in their pursuit of solutions. Since heuristic-based reasoning is the core of engineering method for all engineering disciplines, an impoverished grasp of heuristic methods consigns these students to additional hurdles in their journey toward professional practice as engineers and construction managers. In this session, the various pedagogical approaches attempted during these courses will be unpacked in an effort to understand why engineering students cannot seem to grasp the concept of the heuristic. Failing that, perhaps Amps attendees can help this instructor determine why he was unable to impart it.
Author(s) Biography (200 words each):

Hugh D. Lester is a Senior Justice Planner at Urbahn Architects in New York City. Urbahn is currently replacing all the secure juvenile beds in NYC. His previous projects include the Governor George Deukmejian Courthouse in Long Beach, CA; the Wayne County Consolidated Detention project in Detroit, MI; the Men’s Central Jail Replacement in Los Angeles, CA; and the largest jail ever planned in the United States: the James A. Musick Jail Replacement in Irvine, CA. His doctorate in Sociotechnical Systems at Stevens Institute of Technology integrates “human use” models of buildings and spaces with pedestrian and vehicular autonomous agents. He previously earned bachelors of psychology and architecture and a master of criminal justice degree. A Fellow at the Center for Complex Systems and Enterprises, he has taught Sustainable Design, Green Construction, and Construction Engineering II at Stevens. With an orientation to justice architecture and planning that is both bottom up and operations-centric, Hugh complements and enhances the efforts of everyone involved in successful projects. Optimization, efficiency, precision, and attention to detail are his watchwords; peoples’ lives are at stake.