The E in STEM: Meaningful Content for Engineering

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Online problem solving

The three problems I choose to work are “The Three Jugs Problem”, “Tower of Hanoi” and “Entrapment”. Among the three problems, “Tower of Hanoi” is the easiest to solve because it only involves seven to eleven steps to complete to challenge. In Kirkley (2003)’s definition of problem types, “Tower of Hanoi” is well structured problem as it always uses the same step-by-step solution and its solution strategy is usually predictable. My strategy to solve this problem is to place a smaller disk onto a medium disk first and then move them to the large disk as I know the only way to move the large disk is to remove the smaller disk and medium disk first. To solve this problem, it requires declarative knowledge, such as the concept of size comparation. Problem solver also need to apply their procedural knowledge to come up with the steps and procedure to move the disks.

Among the three problems, “Entrapment” is the most challenging problem to solve because it requires more complex math concept to solve it. In Kirkley (2003)’s definition of problem types, “Entrapment” is well structured problem as it is the same step-by-step solution and converge one correct answer. My strategy to solve the problem is to see those three red circles as med points of a triangle so that I know the right spot to place grey circles is where the three angles of the triangle. I couldn’t solve the problem until my friend taught me how to apply the concept of mid points of a triangle to solve the problem. To solve this problem, it requires declarative knowledge, such as the concept of mid points. Problem solver also need to apply their procedural knowledge to come up with the steps and procedure to move the disks.