

Christin McNeil
Online Problem Solving

The three problems that I worked through for this assignment included The Three Jugs, Tower of Hanoi, and The Wolfe, Sheep and Cabbage. The problem that I felt was easiest to solve was The Wolf, Sheep & Cabbage. I felt that it was the simplest to solve because there were constraints to follow and therefore, less possible solutions. After reading Kirkley's article, I feel that this problem would be considered a moderately structured problem. It is a convergent puzzle with one right answer. I used deductive reasoning to develop my approach to the problem. I began by repeating the goal of the puzzle, to get the sheep, cabbage, and wolf from one side of the river to the other. Then, I broke down the problem, setting intermediate goals. For example, I knew that the sheep could not be alone with the cabbage, or the wolf and I thought about how I could achieve this goal while still transporting the cabbage and the wolf from one side to the other. Breaking down the problem into these smaller steps, was extremely effective in leading me to my success. I used both facts and principle declarative knowledge to assist in solving the problem. The facts that the sheep would eat the cabbage and the wolf would eat the sheep helped me to create and manipulate a mental model of the problem in my solving strategy. I did not solve this puzzle correctly the first time, so the additional information and feedback from my failed attempts encouraged me to "think outside the box" and approach the problem from a different perspective.

The problem that was most difficult to solve was The Three Jugs puzzle. In fact, I had to leave the puzzle and revisit later because I was having difficulty solving it. I felt this problem fell more within Kirkley's ill structured problem as outlined in his article. The goal was vague, and I was not sure where to begin. In addition, there was no one single solution to this problem. The

strategy I took was to “reset” the puzzle anytime I felt like I got too deep or lost. Restarting it allowed me to have a clear mind. Again, I thought about the goal of getting exactly 4 ounces in one of the glasses. Since I was working with 2 glasses that had an odd number of ounces (3, 5), I knew that I would have to manipulate the amount of water so that there was only room for 1 or 2 additional ounces to make an even 4 ounces. My approach with this puzzle, relied much more heavily on divergent thinking and reasoning. I had to focus on manipulating the mental model, incorporating several more steps in this process. I had many more failed attempts before achieving success with this problem and collected additional knowledge that assisted me in my future attempts. The declarative knowledge that is essential in solving this problem lies within the mathematical equation and how you manipulate that equation repeatedly until you arrive at the solution. Quite honestly, due to my lack of declarative knowledge in my approach to solving this problem, I was able to successfully solve it but I could not recreate my success a second time. I believe this speaks to the importance of that declarative knowledge in truly solving this problem.

One thing I can be sure of after an evening of solving these problems is that my brain must have been working hard because I am closing it out with a headache. These types of problems require focus and reasoning skills that our students are not being asked to tap into frequently enough. I am looking forward to incorporating more problem solving opportunities into my curriculum on a daily basis!