Endeavor
Science Teaching Certificate Project

Online Problem Solving

Assignment Overview

Visit at least three of the following websites and work through the problems. As you solve the problems, **think about, jot a few notes, or talk out loud** how you are working through and solving the problems (this is called meta-cognition – thinking about one's thinking processes).

The Three Jugs Problem http://www.cut-the-knot.org/water.shtml
Tower of Hanoi https://www.mathsisfun.com/games/towerofhanoi.html
Entrapment http://www.theproblemsite.com/games/entrapment.asp
Trio Match http://www.theproblemsite.com/games/trio_match.asp
Wolf, Sheep, & Cabbage http://www.plastelina.net/game1.html
http://www.novelgames.com/flashgames/game.php?id=53&l=e
(Note: You do *not* have to login to any of these sites to solve the problems.)

Rationale
This assignment is intended to reinforce the concepts explored in Kirkley's (2003) "Principles for Teaching Problem Solving." In particular, you will meta-cognitively solve the problems and reflect on the processes, strategies, and problem-solving knowledge you brought to bear as you worked through these problems. This will help you to actively develop an understanding of the concepts associated with general problem solving.

Enduring Understandings
Each student will be able to:
1. Encounter different types of word, mathematical, or logic problems.
2. Develop meta-cognition skills.
3. Reflect on the different types of problems.
4. Develop an understanding of declarative and procedural knowledge.

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Responses to the following questions will be evaluated on your ability to explain your answers sufficiently and indicate clarity of understanding?

1. Which problems did you work through?
2. Which problem was the easiest to solve?
3. Why was it easy to solve?
4. What type of problem was it (see Kirkley, 2003 article pg. 8)? Explain.
5. What strategy did you use to solve the problem?
6. How did you develop this strategy?
7. What declarative knowledge was needed to solve this problem?
8. What procedural knowledge was needed to solve this problem?
9. Which problem was the most challenging for you to solve?
10. Why was it difficult to solve?
11. What type of problem was it (see Kirkley, 2003 article pg. 8)? Explain.
12. What strategy did you use to solve the problem?
13. How did you develop this strategy?
14. What declarative knowledge was needed to solve this problem?
15. What procedural knowledge was needed to solve this problem?

Grade (5 points possible)
*NOTE: No credit given for plagiarism