

1125-F5-1420      **Edmund A Lamagna\*** (eal@cs.uri.edu), Department of Computer Science and Statistics,  
Kingston, RI 02881. *Frogs + Puzzles = Algorithmic Thinking.*

Recreational mathematics provides a rich source of fun, interesting problems that can be used to develop mathematical thinking and problem-solving skills. Importantly, recreational mathematics provides a way to “level the playing field” among students with vastly different mathematical backgrounds. Students also enjoy working on puzzles, and will devote more effort to them than routine exercises.

The presenter teaches a liberal arts math course based on puzzles and games. The course is taught entirely through active learning, with no lectures. Students spend each class working in small groups solving puzzles that revolve around a common theme.

One of the activities is a set of sequential movement puzzles in which frogs are required to perform various feats (e.g., reversing positions). These puzzles are a vehicle for learning about algorithms in an “unplugged” way, with no computer programming. The problems conceal much deep mathematical content and provide a springboard into such topics as algorithm analysis, lower bounds, parity, and the generalization of solutions. The problems also encourage the use of problem-solving paradigms such as starting with small cases and observing patterns. (Received September 16, 2016)