

Condor, J. A. (2001). *Effects of computer coaching in metacognitively cued elementary statistics instruction*. PhD University of South Florida. Supervisors: James, A. White and Michael F. Chappell.

Technology-based problem-solving models are being successfully implemented in the mathematics curriculum. This study focused on enhancing problem-solving ability by supplementing traditional instruction in statistics with metacognitively-cued, computer-coached activities. The purposes of this study were to investigate the: (1) differences in ability to solve basic, statistical word problems when comparing a metacognitively-cued, computer-tool (MCCT) group to a metacognitively-cued, computer-coached (MCCC) group; (2) differences in metacognitive ability while solving basic, statistical word problems when comparing a MCCT group to a MCCC group; (3) relationship between problem-solving ability and metacognitive ability while solving basic statistical word problems. A sample of 120 community college, elementary statistics students was divided into four sections with a MCCT and a MCCC group at one time period and a MCCT and a MCCC group at a different time period. Treatments lasted eight weeks of a summer semester. Dependent variables were ability to solve basic statistical word problems as measured by a teacher-made test and ability to think metacognitively while solving the word problems, as measured by the Assessment of Cognition Monitoring Effectiveness (ACME) procedure. The students were also measured on the quality of their responses to written metacognitive cues while solving a basic statistical word problem before each of the exams during the experiment. The dependent variables were measured at five different times throughout the semester. It was expected that the metacognitively-cued, computer-coached groups would show the most improvement and metacognitively-cued, computer-tool groups would show the least improvement on all measures. The data analysis revealed that the apparent difference in problem-solving ability between the MCCT groups and the MCCC groups grew as the study progressed, achieving statistical significance at the last testing, with the MCCC groups being significantly higher at the last testing. The MCCC groups also demonstrated significant higher metacognitive-ability. In addition, significant correlations were found between problem-solving ability and metacognitive ability, ranging from .28 to .66. The presence of some significant teacher effects suggests that the effectiveness of coaching software may be affected by instructional strategy.