Apr 23rd, 9:00 AM - 4:00 PM

Expert-Novice Differences of Error Recognition in Calculus Problems

Alisha Crawley
Illinois Wesleyan University

Lionel Shapiro, Faculty Advisor
Illinois Wesleyan University

EXPERT - NOVICE DIFFERENCES OF ERROR RECOGNITION IN CALCULUS PROBLEMS

Alisha Crawley and Lionel Shapiro*, Department of Psychology, IWU.

Previous research in the area of expert-novice comparisons of mathematical problem solving has focused on the differences in categorization of and performance on math problems. The conclusion has been that while solving or categorizing problems, experts focus on deep processing and novices focus on surface structure. Other research dealing with true/false multiplication equations has shown that adults (considered experts in multiplication) can reject false answers before processing the equation. This study attempted to extend these findings by looking at the differences between experts and novices in the recognition of errors in true/false calculus problems. The subjects were professors (experts) and math students (novices) at IWU. The experiment consisted of 68 true/false calculus problems at all levels of difficulty. The subjects were instructed to answer true or false as quickly as they could without sacrificing accuracy. Reaction time, accuracy, and level of confidence were recorded. Based on the previous studies, we expect to find experts able to process errors at a faster rate. Thus, providing further support for the hypothesis that experts are not only quantitatively better at task performance, but qualitatively different from novices in the type of processing they employ. Results and implications are discussed.