



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

Follow this and additional works at: <http://digitalcommons.iwu.edu/jwprc>

Crawley, Alisha and Shapiro, Faculty Advisor, Lionel, "Expert-Novice Differences of Error Recognition in Calculus Problems" (1994). *John Wesley Powell Student Research Conference*. 26.

<http://digitalcommons.iwu.edu/jwprc/1994/posters/26>

This Event is brought to you for free and open access by The Ames Library, the Andrew W. Mellon Center for Curricular and Faculty Development, the Office of the Provost and the Office of the President. It has been accepted for inclusion in Digital Commons @ IWU by the faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

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.