

1116-Q5-788

Kedar Mani Nepal* (nepal_k@merc.edu), 1501 Mercer University Drive, Mathematics Department, Macon, GA 31207. *Why Students Cannot Solve Mathematical Problems: An Exploration of College Students' Problem Solving Processes by Analyzing the Execution Behaviors of their own Global Plans for Solving the Problems.* Preliminary report.

This qualitative study investigates undergraduate students' mathematical problem solving behaviors by analyzing execution behaviors of their global plans for solving problems. The primary purpose of this study is to explore why many students cannot execute or communicate their understandings in writing even when they demonstrate clear understandings of underlying concepts during their interactions with the teachers and peers. Students in three courses (Calculus I, Calculus II, and Intro. to Diff. Equations) were asked to write their global plans before they started to solve problems in their in-class quizzes and exams. Many categories of student errors were identified in their solutions, and the extent to which those errors affected problem solving efforts was studied. Even though most students had clear and valid global plans for solving the problems, they could not execute their plans successfully in more than 50% of their responses due to algebraic and computational errors, and also errors due to carelessness. These student errors had stronger effects in hindering their effort to successfully solve the problems than the ones due to lack of conceptual understandings. This study is based on Garofalo and Lester's (1985), and Schoenfeld's (2011) problem-solving frameworks. (Received September 12, 2015)