

ABSTRACT

DISSERTATION: Introductory Computer Programming Courses as a Catalyst to Critical Thinking Development

Student: Tonya Pierce

Degree: Doctorate of Education in Adult Higher and Community Education

College: Teachers College

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The purpose of this quantitative study was to investigate critical thinking development in an introductory computer programming course in which problem-solving was a key component of the course, compared with another college level computing course in which problem-solving is not a key component. There were two hypotheses in this study. The first was that students would show a greater increase in critical thinking skills after they participate in CINS 113 than CINS 101. The second hypothesis was that students' critical thinking skills at the beginning of CINS 113 would predict the final grade in the course. Prior to conducting the study, approval was received from both institutions' review boards and all guidelines were followed. A control group was recruited from students enrolled in a course that was determined to not have problem-solving as a key component of the course and an experimental group was recruited from students enrolled in an introductory computer programming course. Both courses were from a Midwestern community college. Program chairs from various regions throughout the state volunteered their faculty and students to participate in the study. Students were administered the Cornell Critical Thinking Test on the first day of the semester and again at the end of the semester. At the end of the semester, faculty submitted final semester grades for all students participating in the program. A comparison of the pretest was made against the posttest using a

repeating ANOVA test to see if there was a significant change between the two scores and if there was a difference in the change in scores between the two groups. In addition, the pretest was analyzed against the final grade for the course to determine if a relationship existed between the critical thinking score at the beginning of the course and the student's success in the course. A correlational analysis, as well as regression analysis, was conducted. There were a total of 213 students who completed the study. The results of the study supported both hypotheses.