

TOWERS, PIZZA, AND PASCAL: STUDENTS CONNECTING MATHEMATICAL IDEAS

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Considerable data have been collected showing pre-college students' success in solving open ended problems, over time, under conditions that encouraged critical thinking (Maher & Martino, 1996, 2000; Muter, 1999; Kiczek & Maher, 1998; Muter & Maher, 1998). These studies with younger students raised the question if similar results were achievable by liberal-arts college students within a well-implemented curriculum that included a strand of connected problems to be solved over the course of the semester. Specifically, this paper reports on one small group of students from a larger study of two-year college students enrolled in liberal arts mathematics. It will describe, in the context of combinatorics, (1) how college students solve non-routine mathematical investigations, (2) What connections, if any, are made to isomorphic problems; and (3) To what extent are justifications made and results generalized. The poster will include examples of student work, transcript segments, and pictures of the students at work solving the problems. These students were engaged in thoughtful mathematics. They solved the problems, justified their solutions, and were able to make connections and build isomorphisms among the various problems. The findings support the importance of introducing rich problems to college students and encouraging them to explore solutions, explain their reasoning and justify their solutions.

References

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