Creativity in Problem Solving for non-STEM majors in Calculus Courses

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In this poster we share a qualitative study aimed at investigating creativity in problem solving for non-mathematics tracked students enrolled in a calculus course. Three task-based semi-structured interviews with volunteered participants were analyzed using a modified whole-to-part inductive approach (Erickson, 2006). Our findings suggest that even though students may perceive creativity as a process, this understanding may not necessarily be reflected in their written work.

Keywords: Mathematical creativity, problem solving, creative process

Given the critical role mathematics has played in contemporary innovation, the development of the talent pool in mathematics has great scientific and economic impact. As research studies exploring math majors' creativity in undergraduate math courses commence (e.g., Savic, et al., 2017), there is still a need to explore how such emphasis can be shifted to explore creativity at lower-level math "service" courses such as calculus.

In this poster, we share a qualitative study that aimed to investigate creativity in problem solving for non-mathematics tracked students enrolled in a calculus course. Individual students' problem-solving process and their self-perception of mathematical creativity were documented through interview data. These task-based semi-structured interviews with 3 volunteered participants were analyzed using a modified whole-to-part inductive approach (Erickson, 2006).

Although no explicit description of the creative process in problem solving emerged from the data, each participant was observed to exhibit all four phases of Carlson and Bloom (2005)'s problem-solving framework. Our findings suggest that even though students may perceive creativity as a process, this understanding may not necessarily be reflected in their written work. Teachers therefore need to create opportunities in the classroom to challenge and push students to take risks to develop their mathematical creativity.

References

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