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Sociomathematical norms and student autonomy in Calculus II Honors students.

Berenson, Sarah et al., PME-NA-20: 20. annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Proceedings. Vol. 1. ,. 131-135.

Summary: This study compared performance and the nature of students' intellectual autonomy in two sections of a second calculus course. An inquiry-based approach to instruction and the TI-92 graphing and symbolic calculator was used in an experimental section while a more traditional mode of instruction and standard graphing calculators were used in the control section. At a macro level, there was no significant difference in students' performance on the common final exam. However, individual student interviews revealed a striking difference in the nature of students' intellectual autonomy. In the experimental section, the two students interviewed reasoned in multiple ways regarding the viability of their solution. In contrast, the two students from the control section appeared to be limited to checking their calculations and looked to the interviewer for confirmation that their solution was correct. In part, we attribute these important differences to classroom norms regarding what constitutes an acceptable mathematical justification.

Classification: C75

Keywords: teaching-learning processes; educational research