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Does Spelling Count? Reflections on Writing in the Mathematics Classroom

Christopher D. Goff

University of the Pacific, cgoфф@pacific.edu

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Does Spelling Count?
Reflections on Writing in the Mathematics Classroom

Christopher Goff
University of the Pacific

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Why Write in Math Class?

- Writing Across the Curriculum
- Philosophy



Why Write in Math Class?



- *AMATYC Beyond Crossroads*
 - Broadening. The mathematical content, reasoning skills, and communication skills developed in mathematics courses should open doors for students to pursue future work in a variety of fields.

Why Write in Math Class?

- *AMATYC Beyond Crossroads*
 - Innovation. Mathematics programs should be thoughtfully constructed to approach content and instruction with appropriate use of traditional and innovative methods. Mathematics content and instruction should include opportunities for students to engage in inquiry, problem solving, modeling, and collaborative learning, using appropriate technology.



Why Write in Math Class?

- *AMATYC Beyond Crossroads*
 - Inquiry. Effective mathematics instruction should require students to be active participants. Students learn through investigation.

Why Write in Math Class?

- *AMATYC Beyond Crossroads*
 - Research into practice. The practice of mathematics teaching should be guided by research on teaching and learning. Faculty are best prepared to design effective mathematics instructional strategies and assessment tools when they have an understanding of the results of pertinent educational research, particularly in cognitive science and learning theory, and when they use those results to make informed decisions about their teaching.



What Does the Research Say?

- Search



Which Math Class?

- Discrete Mathematics
- Linear Algebra
- Abstract Algebra
- Calculus
- College Algebra
- Any class!



What To Write?

- Proofs
- Memos
- Bios
- Letters
- Research Proposals
- Research Projects
- Solutions



What Do They Write?



- Samples of students work



How Did It Go?



- My results
- Literature results



Sample Student Work

- The Economic Value of San Clemente Beach and Consumer Surplus: A Quantitative Analysis
- Johnny's Head: What Lies Inside My Skull
- Gabriel's Horn: The Study of Shapes with finite volume and infinite Surface Area

Some Statistics

	<u><i>learned a lot</i></u>	<u><i>learned a lot of math</i></u>	<u><i>enjoyed</i></u>
Mean	3.84	3.32	4.02
Standard Error	0.16	0.2059126	0.17907168
Median	4	3	4
Mode	4	3	4
Standard Deviation	0.8	1.02956301	0.8953584
Sample Variance	0.64	1.06	0.80166667
Minimum	2	2	1
Maximum	5	5	5
t-value for $\mu=3$	5.25	1.554	5.696
Conf. Int. (95.0%)	0.330223702	0.42498264	0.36958571



Sample Comments

- [M]y project gave me a chance to expand calculus to something that is more related to my major.
- I enjoyed the opportunity to relate what we are learning in math to other subjects of our interest. It was a nice “preview” to our major.
- The Project is a really good way to learn how calculus deals more with the real world.
- [The best aspect of the class was] learning the different methods used in calculus and how it relates to the real world.



Results

- Students “learned a lot,” although not necessarily about mathematics.
- Students “enjoyed” the project.
- Students learned how Calculus applied to their major and to the “real world.”