

UNIVERSITY OF ILLINOIS  
AT URBANA – CHAMPAIGN

**Department of Curriculum and Instruction**

College of Education  
387 Education Building, MC-708  
1310 South Sixth Street  
Champaign, IL 61820



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To Whom It May Concern:

My name is Gloriana González and I am an Assistant Professor in Mathematics Education. In the fall semester of 2009 I visited the Math 403 course taught by Dr. Francis on a weekly basis. In my research, I am particularly interested in the teaching and learning of geometry. Therefore, when I started my work at the University of Illinois, I contacted Dr. Francis, asking him to visit his class. He welcomed me in his classroom and I was able to see students' development.

In the class, Dr. Francis underscored important points in the class notes. His explanations were very useful for teaching students how to read mathematical texts. In particular, Dr. Francis would tell students how to read a proof, thus uncovering strategies that students could apply when writing their proofs. Dr. Francis also made apparent the connections between mathematical ideas in the geometry class and prior mathematical courses. This was important because students could learn to value the new theorems through an understanding of how these theorems were related to other mathematical content that they had studied in the past (e.g., in high school and in college mathematics courses).

The use of multiple resources for students to keep track of their mathematical ideas was something else that Dr. Francis emphasized in the class. This was important because students were expected not just to develop a good grasp of mathematical ideas, but also to develop dispositions that would help them to study mathematics in the future. For example, Dr. Francis asked students to keep a mathematical journal. In addition, Dr. Francis encouraged students to visualize mathematical concepts and to draw diagrams while working on theorems. The online environment provided students opportunities to interact with the text by providing links to remind students about useful definitions and theorems, by providing diagrams and explanations about those diagrams, and by asking questions that students could use as self-assessments of their understanding of the material.

The special projects in Dr. Francis class required students to make use of multiple resources and to make connections with other domains such as art. In one of the projects, students developed a better understanding of perspective drawings through their application of their use of geometry. In another project, students had to study the effects of compositions of transformations. The results of these projects had to be presented in class. Those presentations required students to draw upon their knowledge to convince others about the relevance of their findings. This project enabled students the opportunity to communicate mathematical ideas in class. Moreover, the students had to challenge to show their conjectures and later prove those conjectures.

Overall, the class provided an opportunity for students to learn specific mathematical content as expected. But the class went beyond the teaching of that content to teach students dispositions and habits that are useful when doing mathematical work. It may be challenging to transfer some of the interactions in the class to an online environment. The online environment for MATH 403 makes apparent some of the expectations when doing mathematical work. The online notes provide opportunities for students to develop study skills in mathematics and to establish connection with their prior knowledge. The notes are meant to be interactive, so students have a chance to change a diagram or to answer questions to assess their understanding of the material. Therefore, the online program supports students' mathematical learning.

Sincerely,

Gloriana González, Ph.D.