

Monday, September 14, 2009

The UMD Science Education Seminar Presents...

Brian Danielak

The Role of Emotion and Affect in Engineers' Mathematical SenseMaking

1:15pm – 2:45pm

Physics Toll Building, room 4208

ABSTRACT: Successful engineers use mathematics in ways that blend its formal structure with causal and functional relations in the real world. They carry out central tasks such as modeling by moving freely between and among different representations--mathematically symbolic, graphical, conceptually qualitative--in a process we call "mathematical sensemaking." Unfortunately, many engineering students have difficulty sense-making. [Our work](#) explores the factors that give Electrical Engineering (EE) students trouble, and the instructional modifications we can make to support students' sensemaking.

In this work-in-progress talk we'll share video of "Wanda," an EE student. We'll present her reactions to interview prompts involving sensemaking, conceptual reasoning, and distinctions between the real world and the "ideal world" of engineering instruction. We believe her strong reactions to those prompts suggest issues of emotion, identity, and affect are bound up in students' difficulties in sensemaking. We view our talk as coparticipatory: we seek your help analyzing raw data to examine how Wanda's emotions affect and are affected by her tendency to sensemake.