

1077-M1-1004 **Douglas A. Lapp*** (lapp1da@cmich.edu), Department of Mathematics, 214 Pearce Hall, Mount Pleasant, MI 48859. *Building Symbolic Meaning Through Dynamically-Connected Representations in Abstract Algebra.*

This session describes the use of technology to promote mathematical exploration in abstract algebra courses. Experiences will be shared from research conducted on students' learning of abstract algebra and approaches for infusing technology into this course to promote mathematical discourse will be discussed.

This talk illustrates a pedagogical shift from a teacher centered classroom toward student-centered environment using technology that integrates a computer algebra system, dynamic geometry system, spreadsheet, data collection, and dynamic statistics system into one device where all representations are dynamically connected. Changes to any created object in any problem page of a document results in real time changes in other connected objects on any page within the same problem. Research shows that it is this ability for the student to interact with multiple representations visible on the same screen and notice aspects of situations that remain invariant across representations that promotes reification of abstract concepts. Preliminary results from an ongoing study of students' learning of abstract algebra and examples of curricular changes that promote this reification within the traditional abstract algebra courses will be shared. (Received September 20, 2011)