

1077-M1-2693 **John Paul Cook*** (jcook@math.ou.edu). *A Guided Reinvention of the Definitions of Ring, Integral Domain, and Field*. Preliminary report.

Within the last decade there has been a sizable increase in studies which develop innovative methods of teaching abstract algebra. In particular, the work of Larsen (2004, 2009) develops instructional theories to promote student reinvention of basic group theory concepts such as group, group isomorphism, and quotient group. Despite this spike in creative approaches to the subject, nearly all of the relevant literature pertaining to the teaching and learning of abstract algebra is confined to group theory, leaving ring and field theory relatively untouched. To this end, this talk presents some preliminary results from a study which aims to create an original approach to teaching ring and field theory. In particular, I will present preliminary results from a developmental research project designed to produce an instructional theory which supports the guided reinvention of the definitions of commutative ring, integral domain, and field, along with some results concerning the implementation of this instructional theory in a classroom setting. (Received September 22, 2011)