

*Title:* Student Understanding of Eigenvectors in a DGE: Analysing Shifts of Attention and Instrumental Genesis

*Abstract:* This study examines the potentialities of the theory of instrumental genesis and shifts of attention in analysing students' evolving understanding as they interacted with a dynamic geometry representation of eigenvectors and eigenvalues. Although the former theory provides a framework to analyse students' interactions with tools and transformation of tools into instruments, it makes an assumption about the role of instrument in cognitive development. According to Verillon and Rabardel (1995), the founders of the theory, the role of instrument in cognitive development is a sensitive point. I thus explore the complementary use of the theory of instrumental genesis with the theory of shifts of attention to enable an analysis of students' cognitive development in a digital technology environment.

*Keywords:* Technology, linear algebra, instrument and attention