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*What is pre-service understanding on the concept of vector?*

This study examined pre-service teachers' knowledge on the concept of vector. Literature reports that pre-service teachers struggle with making connection between a way that vector is introduced in school mathematics (directed line segments) and that in college mathematics (elements of a vector space). Eighty pre-service teachers preparing an exam for public secondary mathematics teachers in Korea participated in a survey. Hillel's theory about modes of description was employed to analyze their Mathematical Knowledge for Teaching about vectors regarding (1) Common Content Knowledge (CCK): To what degree do you think mathematical objects describe properly the concept of vector? and (2) Specialized Content Knowledge (SCK): How would you respond if your students ask the concepts of vector, zero vector, and negative vector? Results show that pre-service teachers' CCK and SCK on vector were both leaning towards geometric objects. The pre-service teachers' CCK was also strongly related to their SCK that they use when they became teachers. It was apparent that their knowledge was closer to school mathematics rather than college mathematics. This presentation will discuss the implication of the study to design college mathematics courses for teachers. (Received September 26, 2012)