

1145-J5-343

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Dynamic Geometry Tasks for Inquiry-Oriented Axiomatic Geometry.

In this talk, I will present dynamic geometry tasks and student work from an inquiry-oriented axiomatic geometry course offered at a large public university in Spring 2018. The course aimed at guiding students to re-invent the axiomatic system of Euclidean geometry, the independence of parallel postulate, and non-Euclidean geometries including hyperbolic and elliptic geometries. Dynamic geometry tasks were designed for students' mathematical inquiry that involves defining geometric concepts, generating conjectures from examples, explaining and proving geometric statements. Student work from the tasks was collected in the form of screencast presentations, which include video recordings of their manipulations on DGE screen and audio recordings of their verbal explanation responding to the questions given in the tasks. A qualitative analysis of the data revealed how the students' mathematical reasoning related their uses of DGE in certain ways in which they interacted with dynamic constructions in DGE to support their arguments as well as develop mathematical concepts in non-Euclidean geometry. Different patterns of this relationships provide a glimpse of the students' different views of geometric model and mathematical proofs. (Received September 02, 2018)