

The Ferris Wheel problem
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This working session will focus on a problem that is part of the Interactive Mathematics Program for the senior year in high school. Imagine a Ferris Wheel and a train travelling underneath. A diver is in one of the ferris wheel's cart waiting for the right time to jump in order to land safely on a cart full of water that is part of the train. The problem is when he should jump. The unit was conducted by Jesse Solomon in his class at City on a Hill public charter school in Boston, Massachusetts. In order to investigate new ways to work with the Ferris Wheel problem, we constructed a physical device that includes all the components (a ferris wheel, an electric train, a diver jumping at a pre-set time, etc.) although in a reduced scale to allow for its classroom use. The speed of the ferris wheel and of the train can be changed by turning two knobs on the controllers. The time at which the diver is going to jump is set by positioning a magnet on the train track, so that the jump will take place whenever the train goes over the magnet. Students worked on this unit for six weeks.

The working session will be divided in two parts. During the first half the participants will work on different mathematical aspects of the Ferris Wheel problem and on ways to connect it to the behavior of the Ferris Wheel device. During the second half the participants will analyze selected episodes filmed in Mr. Solomon's class. The coordinators will set up the ferris wheel device and bring videotapes and transcriptions for the selected episodes.

The research question for the session will be about the roles of physical experiences in mathematics learning. This question will be explored through the participants' engagement with the ferris wheel problem as well as through the analysis of classroom interactions.