**What is being learned? What mathematics is the focus of the activity/technology? Is relational or instrumental understanding emphasized?**

Students deepen their understanding of the differential relationship between position, velocity and acceleration functions. They can also see how instantaneous rates of change can be important in real, physical situations. Working with this applet, students will improve their relational understanding of these concepts, by comparing the different functions (parabolic, linear, and constant).

**How does learning take place? What are the underlying assumptions (explicit or implicit) about the nature of learning?**

Students learn by comparing the motion they observe with the charts it generated, and by comparing the charts against each other. The assumption is that giving the concepts a context will make them more meaningful for students.

**What role does technology play? What advantages or disadvantages does the technology hold for this role? What unique contribution does the technology make in facilitating learning?**

This technology changes the tasks of recording real, physical data on position, velocity and acceleration, graphing them and then comparing them by providing the data and charts. While this does distance students from the real world, it makes the data more manageable, and focuses the lesson on the comparison, not the data collection. The downside is that the graphs are limited in size, and it is difficult to see all of the motion.

**How does it fit within existing school curriculum? (e.g., is it intended to supplement or supplant existing curriculum? Is it intended to enhance the learning of something already central to the curriculum or some new set of understandings or competencies?)**

This provides a supplement to a main topic in the calculus curriculum, and provides a cross-curriculum connection to physics.

**How does the technology fit or interact with the social context of learning? (e.g., Are computers used by individuals or groups? Does the technology/activity support collaboration or individual work? What sorts of interaction does the technology facilitate or hinder?)**

The technology is best used by individuals or pairs. It doesn’t support multiple users at a time. More than two students at a computer will provide too much of an opportunity for disengagement.

**How are important differences among learners taken into account?**

This applet is good for students who are active learners and prefer working with something they can manipulate. It provides good visuals and connects a sense of movement to what students see on the graphs.

**What do teachers and learners need to know? What demands are placed on teachers and other "users"? What knowledge is needed? What knowledge supports does the innovation provide (e.g., skills in using particular kinds of technology)?**

Students and teachers will need to familiarize themselves with all of the controls the applet has. There are sliders and textboxes that can be used to set the initial values of all three properties, and controls to zoom in and out on the graphs. You can record the motion and play it back.