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Teaching with Toys: Why? and How? BEVERLEY TAYLOR, Miami University — The exploration of common toys produces deep learning by emphasizing concepts and connections before formal definitions and mathematics. It also connects the classroom to the familiar world outside of school and gets students writing and talking about physics ideas. Investigating what toys do and how they do it can be a challenging application of physics from the introductory course up through senior mechanics. Toys provide an ideal system for the kind of open-ended inquiry that introduces students to what scientists really do. They can pose their own questions, explore the behavior of the system sufficiently to create a hypothesis, use their theoretical knowledge to make a simplified model of the system and predict an outcome, design an experiment, discover that the real world is messy, think about what they haven't taken into account with their simple model and try to improve it. I have spent close to 30 years thinking about how to use toys to enhance physics education from 4th grade through college. In the process I have collected hundreds of toys relating to mechanics, sound, light, electricity and magnetism. I will discuss the pedagogical reasons for using toys in physics education and the many different ways to use them from demonstrations to laboratory experiments to discussion starters. I will demonstrate a few of my favorite toys and there will be a variety of toys available for you to take home to use with your own students.

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