

Videos

We produced short videos to explore how they might help students look at phenomena in terms of energy. We asked students to use the videos to look more closely at phenomena they explored in hands-on investigations. We scrolled through the videos frame-by-frame as the students gave a "play-by-play" narration of what was happening. They looked at the videos a second time narrating what was happening in terms of energy.

Using video, students have time to observe carefully and "see" indicators of energy changes that are not easy to see in real time. For example, in the ball and spring video, students can see that there is an instant in time when the spring is fully compressed and the ball is still; while the image of the moving ball is blurry, the image of the still ball is sharp and clear. This provides an opportunity for students to look through the energy lens and ask, "Where does the energy go? If the ball and spring system loses energy of motion (neither the ball nor the spring are moving), where is the energy gain?" Confronted with this evidence, students conclude that the compressed spring has gained energy. When the spring extends, students notice that the ball does not roll away from the spring as quickly as it rolls in and that the spring continues to oscillate after the ball leaves it -- the ball loses energy of motion and the spring gains energy.

