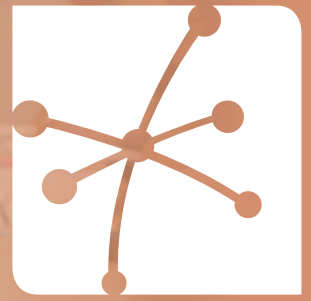


FORCE & MOTION



Making Sense of SCIENCE

FORMAT

5-day face-to-face professional learning courses.

AUDIENCE

Teachers of science in grades 6–8

SEQUENCING

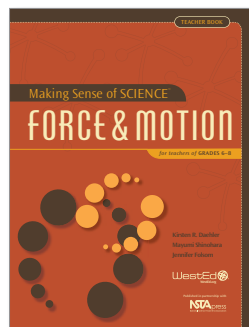
All the 5-day courses are complementary and they can be taken in any order.

RELATED MATERIALS

The *Making Sense of Student Work* protocol is available for teachers to use with their school-based professional learning communities as follow-up to the 5-day courses.

Implementing NGSS?

An optional next generation science toolkit is available that supports teaching toward the Next Generation Science Standards (NGSS). It provides a framework for exploring core properties of next generation science including the use of phenomena-based instruction and the equitable engagement of all students in multidimensional science learning. It also takes a dive deep into the NGSS Science and Engineering Practices (SEPs) and the Crosscutting Concepts (CCCs).



Our world is full of motion. In this course, participants work to make sense of the different kinds of motion we encounter by unpacking what makes things move in the first place. The science learning begins with participants exploring data sets — they draw diagrams, work calculations, and make graphs to visualize the information. Participants then explore the role of forces and how objects accelerate with a series of fan cart

experiments. Participants then dive deeply into the variety of forces and explore how friction and gravity affect motion of objects. The course concludes with an investigation into Newton's Second Law and the relationship between force, mass, and acceleration.

As a natural part of many learning experiences, we engage in reading to further our understanding. This course provides participants with dedicated time to pause and be metacognitive about their reading process. These Literacy Investigations allow participants to consider their own reading history, discuss strategies for reading, compare and contrast science reading with other types of reading, and explore the role of metacognition in their own learning and the role they think it might play with students.

The Teaching Investigations in this course provide participants with the opportunity further connect to the classroom. Through analysis of teaching cases, participants get a glimpse into other teachers' classrooms, unpack the value of different instructional moves and strategies, examine students mental models, and explore the tradeoffs of different instructional approaches for teaching about force and motion.