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The many faces of a computational medium: teaching the mathematics of motion.

DiSessa, Andrea A. et al., Computers and exploratory learning. Springer, Heidelberg (ISBN 3-540-59202-4). 337-359 (1995).

This chapter reviews the development and deployment of two editions of a course on the mathematics of motion. The course was based on the premise that everyone involved – students, teachers and researchers – should develop a flexible competence with a general, programmable computational medium, Boxer. We illustrate the many ways that Boxer was used in the course, from microworlds and flexible tools to tutorials, from a compact and precise notation in which to define and use fundamental concepts, to providing the basis for extended and thoroughly personalized independent projects. A computational medium has many attractive qualities that help foster a gradual but effective shift in classroom practices to new ones that support more effective and more enjoyable learning of important mathematical and scientific ideas. (orig.)

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