Physclips: Multi-level multimedia resources

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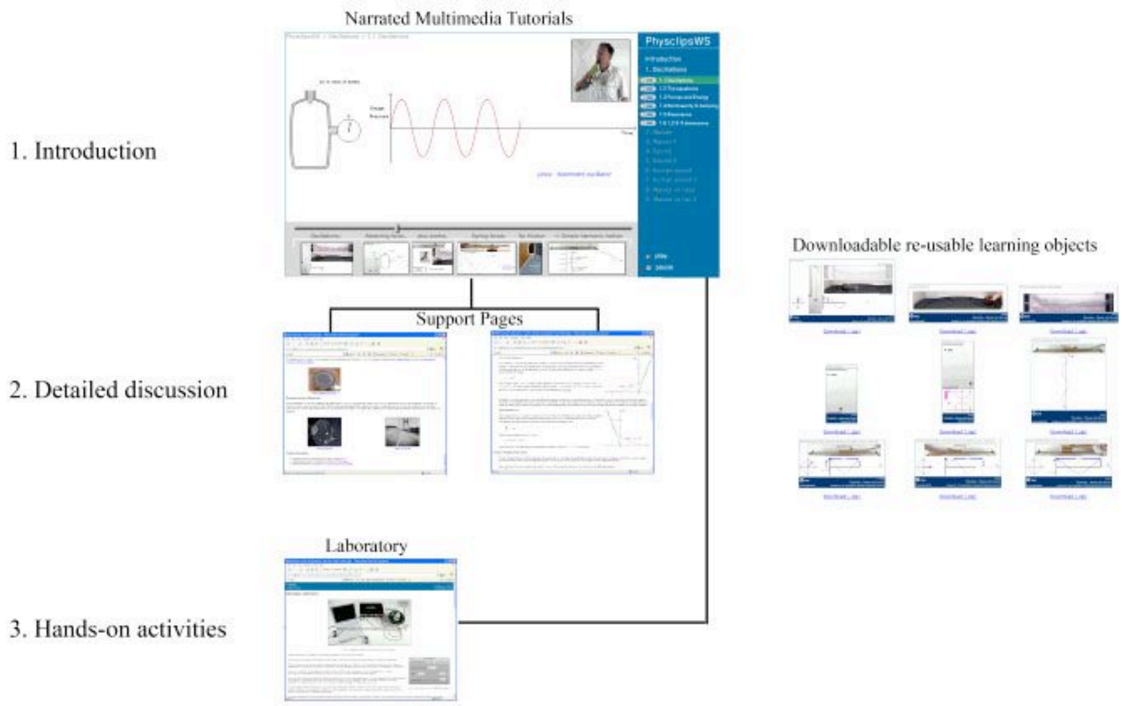
Physclips is a multi-level, multimedia introduction to mechanics, waves and sound, electricity and some other areas of introductory physics, covering the levels from late high school to first year university. It combines film clips of experiments with animations, diagrams and explanations in both voice-over and text. Particularly powerful are film clips integrated with animated material such as dynamic displacement-time plots, moving vectors and histograms representing time-varying quantities in the clips. Each topic has a brief multimedia overview, which branches via links to extensive supporting material giving broader and deeper discussion. In the most recent addition, each chapter has a laboratory section to provide hands on activities utilising some common, inexpensive components. For teachers, there is a "downloads" page to select individual re-usable learning objects for use in lessons or to download zipped collections of entire sections.

Keywords: physics, multimedia, animations, laboratories.

Overview of website structure



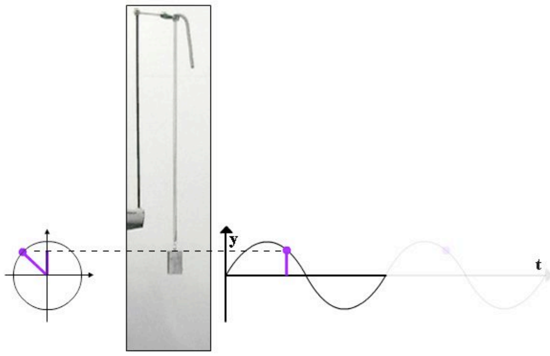
Physclips can be viewed at http://www.animations.physics.unsw.edu.au/

The elements

Narrated tutorial

Topics are introduced in narrated multimedia presentations that incorporate video clips, animations, and static diagrams. Each chapter has sections and each section is further divided into subsections whose titles and icons are distributed along a scrollbar.

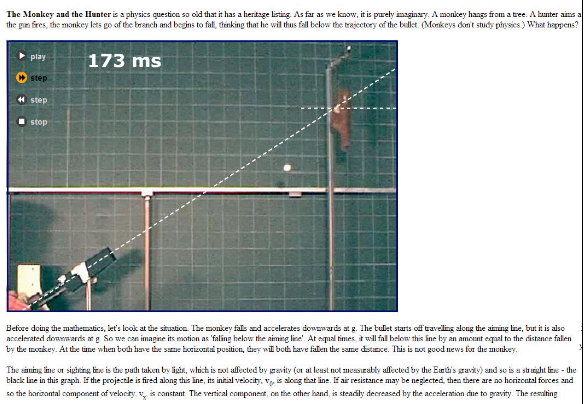
This example shows how the film clip (a mass on a spring) is correlated with animations of two abstractions: the displacement-time graph (right) and the phasor representation (left).



Support pages

The rich-multimedia modules regularly use contextually embedded hyperlinks to web pages that provide deeper explanations or analysis and broader discussions and examples, together with further links.

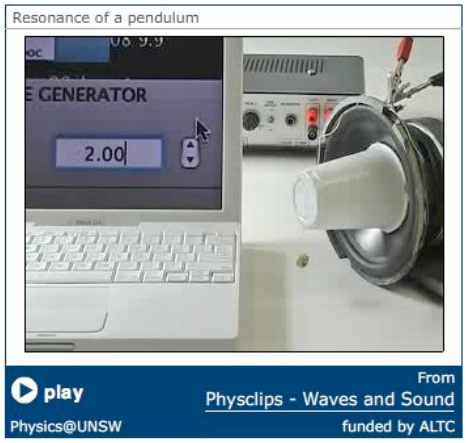
This support page uses stop-frame, high-speed video to show and to analyse in detail an ancient and classic example: *The Monkey and the Hunter*. (A monkey releases a branch at the instant a hunter fires a gun aimed at him. What happens?)



Laboratory activities

In the most recent volume, each chapter has a laboratory section to provide hands on activities utilising some common, inexpensive components.

Here, to show resonance in a pendulum, the computer runs downloadable software that operates as a controllable oscillator. This drives an audio amplifier (such as may be borrowed from a sound system), a loudspeaker, a paper cup mount and a pendulum made from a nut, dental floss and blu-tak.



Scrollbar

A visually enhanced scrollbar provides an overview of the tutorial and minimises searching behavior.

Acknowledgment

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