

Flow + Interactivity + Control + Learning

About...

This research is part of a PhD study at the University of Melbourne.

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Research Questions

This research aims to help us understand the interaction between locus of control, flow and online learning. Specifically:

"in what way do locus of control & flow interact to affect learning outcomes for an online task?"

Areas being addressed are:

measuring flow
the relationship between flow & learning
the relationship between locus of control & learning.

Flow is...

- Being fully engaged in an activity
- Unaware of distractions
- Distortion of time
- Loss of self-consciousness
- Extremely enjoyable experience!

and is encouraged by...

- Balancing challenges and skills
- Setting clear goals
- Unambiguous feedback.

Experiments...

- Students experience highly interactive learning tasks
- Data collected by web logs and 'question probes'
- Students 'teach' other students physics concepts
- Some sessions videoed in usability lab
- Post interviews solicit flow information.

Analysis...

- Web logs plot student activity (see below)
- Web logs display interactions with simulation
- Question probes & interviews indicate flow through tasks.

The screenshot shows the iMotion software interface. On the left, there are two graphs: Velocity (Vel) and Acceleration (Accel) over time. The Vel graph shows a blue line that starts at 0, goes down to -1.00, then back up to 0. The Accel graph shows a blue line that starts at 0, goes down to -0.20, then back up to 0. Below the graphs is a simulation of a cart on an inclined plane. On the right, there is text for 'Activity 7: Slowing down & coming back - checking'. The activity instructions are: (a) Give the cart a gentle push to the left so that the cart slows down and reverses direction without hitting the left-hand end of the track. (b) For the complete motion, sketch the blue parts of the velocity-time and acceleration-time graphs on top of your predicted ones using a different coloured pen. (c) Now think about how your velocity and acceleration graphs compare. Note especially what happens to both graphs at the point where the cart changes direction. Is the value changing? Is it zero, positive, negative? At the bottom, there are three radio buttons for a challenge level: 'too low', 'just right', and 'too high'.

Example of learning materials

