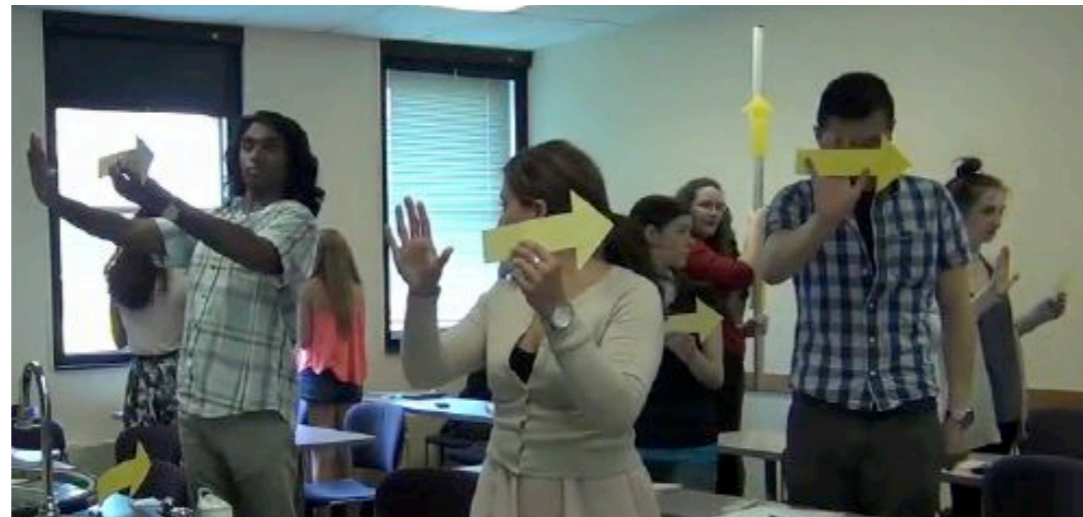


Sequencing Kinesthetic Activities to Explore Fields and Forces



Mary Bridget Kustusich and Susan Fischer

DePaul University
AAPT - Minneapolis, MN
30 July 2014



DEPAUL UNIVERSITY

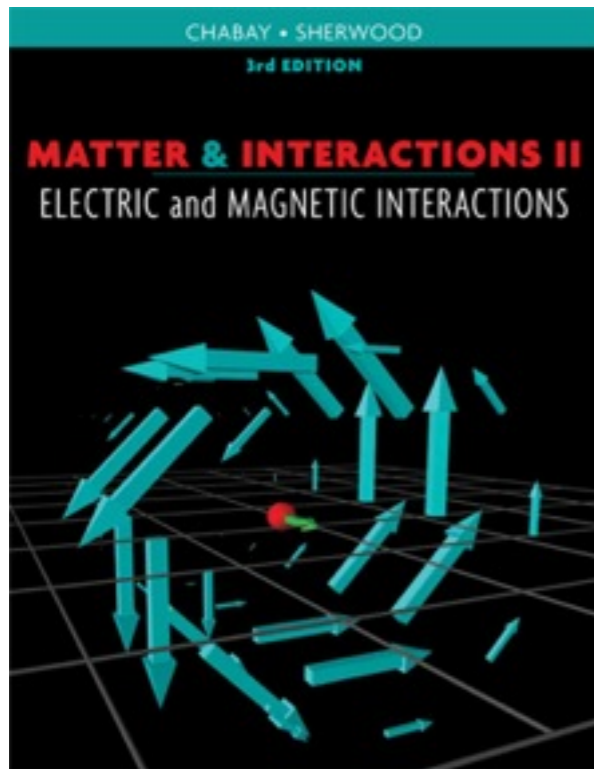
Premise I:

We use our bodies to think

Premise II:

It is important to build on
prior knowledge

Old wheels / New sequence



matterandinteractions.org



perusersguide.org



Paradigms in Physics Project

physics.oregonstate.edu/portfolioswiki



scaleup.ncsu.edu

Context and Goals

Algebra-based E & M

~15-20 pre-med majors

Connecting Forces & Fields

Observation Location

Vector Addition

Patterns of Fields in Space

Activity Time

- **You** are a chunk of mass in space
- **I** am a giant star
- Extend your arm in the direction of the force **you** feel from **me**

Gravitational Force \rightarrow
Electric Force \rightarrow Electric Field



Electric field from a **positive** charge versus a **negative** charge



Electric Field of a Dipole



Electric field from a **positive** charge

Electric field from a **negative** charge



Total electric field from a dipole

Patterns of Electric Field: Infinite plane of charge



Patterns of Electric Field: Infinite plane of charge



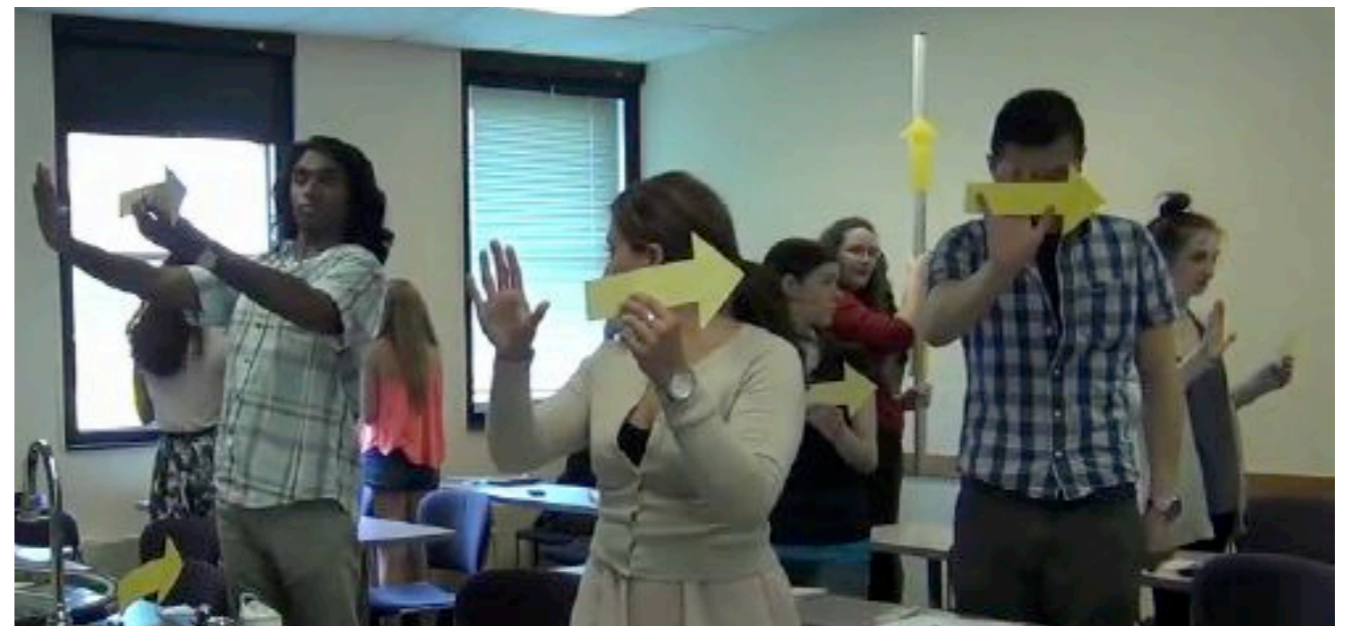
Patterns of Electric Field: Infinite plane of charge



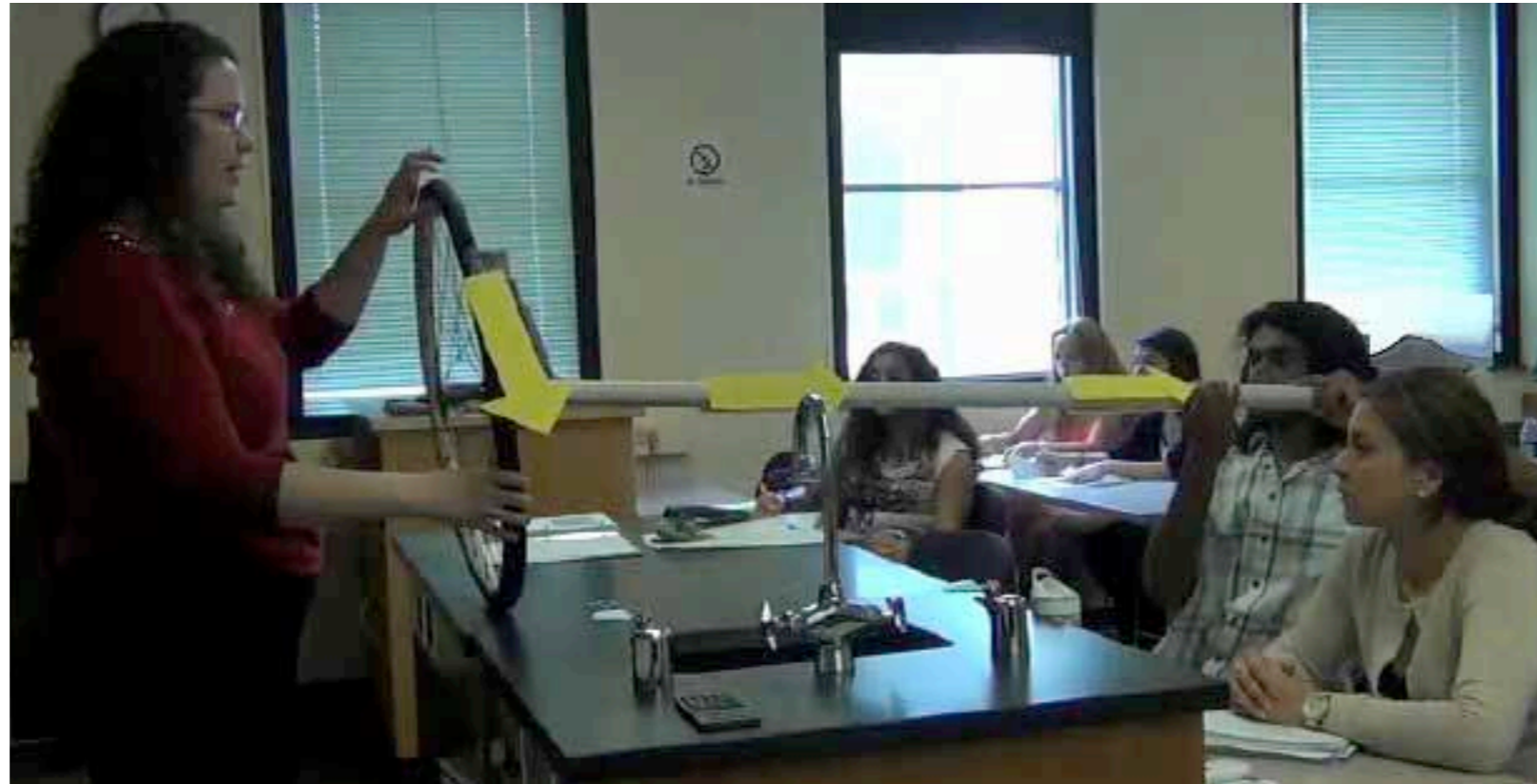
Patterns of Electric Field: Infinite plane of charge



Magnetic Field



Magnetic Field



Magnetic Force



Does this help?

- Based on feedback and engagement... YES!
- Analyze classroom video and written work