

The iPad as a Tool for Learning

Workshop Goal

How do we turn **Discontinuous Content** into a **Context for Learning Physics**?

Groups

1 – 5

Projectile Motion

6 – 10

Air Resistance/Drag



Activity 1: App Selection

Apps are small “programs” that may be installed on the iPad. There are thousands and thousands of them. Some are free, some are not. Apps can be used for engagement, exploring, explaining and assessment.

Kathy Schrock has put together a comprehensive website that focused on a new model for Bloom’s Taxonomy at: <http://www.schrockguide.net/bloomin-apps.html>

Moreover, Apps are often divided between Content Apps and Creating Apps.

Your task:

Students can construct their own knowledge and meaning by exploring an App. In the App Store, find an App that would help students understand the topic of projectile motion or air resistance. Assume that the students have no knowledge of the topic.



Activity 2: iTunesU

iTunesU provides a rich selection of content for classroom use, for flipped classroom models, for tutorials and for review.

As we continue to build our list of discontinuous content,

Your Task

1. Explore iTunesU for a short but helpful introductory video on your assigned topic.
2. Decide if you wish to use this video as an introduction, for review or for assessment.



Activity 2: Explain Everything

One of the many benefits of modeling instruction is that it allows teachers (and fellow students) to have a window into how students think. We will use the App Explain Everything.

The modeling approach has the following instructional goals for free fall and projectile motion.

1. Define free fall as motion when the only force acting on the object is gravity.
2. Revisit 1-D acceleration motion (now in the y -direction).
3. Extend 1-D math models of accelerated motion to 2-D projectile motion.
4. Decompose projectile motion vectors into x and y components
5. Describe projectile motion as the simultaneous occurrence of two 1-D motions
6. Extend force diagrams and motion maps to motions in 2-D

Your Task, Part 1

1. Use the iPad to take a picture of your scenario – projectile motion or air resistance. You will need a picture of the freely-falling parachute man or a picture of your football in motion. You may also chose to take a picture of each object not in motion.
2. In your diagram in Explain Everything, draw a free body diagram for you object.
3. Create an audio explanation that justifies/explains your free body diagram.

Your Task, Part 2

1. There are several key physics concepts involved in projectile motion and air resistance/drag.
2. Use Explain Everything to create a brief topic introduction. Think of this as pre-lab discussion for the upcoming lab activity.



Activity 3: Data Collection

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1. You will be using Vernier Video Physics to collect data. Our two investigation questions are:
 - a. Is there evidence of air resistance from data collected during free fall??
 - b. What relationship exists between the projectile launch angle and range.
2. Use the App Video Analysis to collect x- and y- data for distance and velocity. I'll leave it to you to figure out how you can use your data to support your answer to your specific investigation question.
3. Export your Video Analysis data as a movie.
4. You may also send your data to Graphical Analysis if you want to complete a more specific data analysis.



Activity 4: Reporting

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1. You will use Pages to create a digital lab report.
2. You will need to create the following
 - a. A video introduction (using the iPad video camera). Explain the purpose of the lab and a description of the procedure.
 - b. A conclusion “paragraph” (using the iPad video camera) which summarizes your results. Be sure to include how your data supports your investigation question.
3. In your digital lab report, you need to include
 - a. Video introduction
 - b. Free-body diagram video from Explain Everything
 - c. Modeling perspective video
 - d. Your data video from Vernier Video Analysis
 - e. Your video conclusion

And be prepared to share!