Creating PhET Activities using Guided Inquiry Strategies

The PhET simulations (www.phet.colorado.edu) are specifically designed and tested to support student learning. However, what students do with the sims is as important as the simulations themselves**.** PhET sims may be used in many different types of activities but we believe the sims are most effective when integrated with ***guided inquiry activities*** which encourage students to construct their own understanding. We suggest:

1. Define specific learning goals
The learning goals need to be specific and measurable. Many of the sims are complex and students can become overwhelmed; align the lesson with your goals.

2. Encourage students to use sense-making and reasoning
The activity should be geared towards encouraging the student to operate in learning mode not performance mode. What can they discover about the physics? What connections do they find? How does it make sense? How do they explain what they discover?

3. Connect and build on students' prior knowledge & understanding
Ask questions to elicit their ideas. Guide students' use of the sims to test their ideas and confirm their ideas or confront any misconceptions. Provide ways for them to resolve their understanding.

4. Connect to and make sense of real-world experiences
Students will learn more if they can see that the knowledge is relevant to their everyday life. The sims use images from everyday life, but the lesson should explicitly help them relate to their lives. As you write the questions and examples, consider their interests, age, gender, and ethnicity.

5. Design collaborative activities

The sims provide a common language for students to construct their understanding together. More learning happens when they communicate their ideas and reasoning to each other.

6. Give only minimal directions on sim use
The sims are designed and tested to encourage students to explore and make-sense. Recipe-type directions can suppress their active thinking.

7. Require reasoning/sense-making in words and diagrams
The sims are designed to help students develop and test their understanding and reasoning about things. Lessons are most effective when students are asked to explain their reasoning in a variety of ways.

8. Help students monitor their understanding
Provide opportunities for students to check their own understanding. One way is to ask them to predict something based on their new knowledge and then check the prediction with the simulation.