

COMPILATION: Conceptual Kinematics, Geometer's Sketchpad software

Date: Sat, 21 Oct 2000

From: David Wirth

I am team teaching a Freshman Math-Physics class in which we are integrating the two disciplines in order to improve comprehension and to show the relationships between the two. We are using a variety of teaching techniques including modeling. The course is going well thus far and students have made some great strides. We have just been given the opportunity of getting a \$1000.00 grant to purchase additional course materials. We have considered using the money to buy software that can be used to motivate students, show further relationships and to show some applications of the material. We are looking for suggestions of software that would be at the appropriate level (average freshman) and would fit this purpose. Our lab is presently equipped with the standard modeling software. Any suggestions?

Date: Sat, 4 Nov 2000

From: Jane Jackson <jane.jackson@ASU.EDU>

David: I called Rex Rice in St. Louis and asked him. Rex is an excellent modeler! He teaches regular physics to 9th graders, as well as 11th & 12 grade physics courses.

Rex recommends CONCEPTUAL KINEMATICS from Physics Academic Software (PAS). He says it's more comprehensive than GRAPHS & TRACKS. He uses both, at both levels (9th grade and 11th-12th grade courses). It works fine on older computers as well as new ones; Macintosh and PC (for which the program is in DOS). A site license is \$350; get ordering information at www.aapt.org.

Rex reminded me that Louis Turner, Phase 1 modeler & workshop leader near Akron Ohio, co-authored CONCEPTUAL KINEMATICS.

In the PAS catalog is a quote by Jack Skrocky, Phase 3 modeler at UC-Davis: "Conceptual Kinematics does its own teaching! Its interactive nature keeps students involved and working cooperatively."

I quote from the catalog blurb:

"Do you ever feel like there's not enough time to really reach those students who are struggling with a difficult concept? When a review is in order but time is short, CONCEPTUAL KINEMATICS can help. This interactive program provides the busy teacher with an effective, self-paced tutorial for the student who needs another look at the material -- and what beginning student doesn't?

An ideal complement to sonic ranger experiments, CONCEPTUAL KINEMATICS gives your students the practice they need to understand and apply the definitions of position, velocity, and acceleration. Structured as a tutorial featuring carefully formed questions, Conceptual Kinematics presents animations, strobe photographs, and multiple graphical representations of motion. The tutorial questions have distracter responses based on common student misconceptions ..."

(It also has a quiz mode, & built-in record-keeping system. The 50-page manual has test questions.)

Date: Tue, 7 Nov 2000

From: blantonp@APPSTATE.EDU

One suggestion would be The Geometer's Sketchpad from Key Curriculum Press
<http://www.keypress.com/catalog/products/software/Prod_GSP.html>.

This would be especially good if you are doing the underpinnings stuff and are looking at proportionate reasoning. We've just finished using it with a math class to develop trig function relationships. Students constructed a horizontal line, rotated a line about the endpoint to create an angle, put a point on the horizontal line and construct a perpendicular, construct the point of intersection, then measure the sides of the right triangle constructed (the measure tool is built in). Then the ratios of the sides can be measured. Since this is a "dynamic geometry" program, you can move the perpendicular line, see the lengths of the sides change, and see that the ratios don't change. I think this would be great for vectors.
