RAMPED – Summer 2016

Intro into CS for Modeling Adaptive Systems Grades 5-8

Victoria Davis, Adapted from Code.org

Currently the pretest and post test require a JCSD#1 sign in. If you would like access to them, please email me at vdavis@jcsd1.us and I will get you a copy.

Pretest Questions	What is a model? Why would we use modeling in STEM fields? What can be used to make a model? What is code as it relates to computers? What models do you remember making and why did you make them?
Objectives	Students develop basic computer coding skills within StarLogo Nova to model complex adaptive systems such as ecosystems and water cycles.
Catch	Follow the participatory simulation within the code.org Module 1 lesson. However, when they get to the design an experiment stage- split them into small groups. Have them write out their instructions. They can use incomplete sentences, but they need to test run this. They swap their solutions with other small groups. Come back together and discuss what went well, what needed changed, how this relates to computer algorithms?
Activity	Have small groups run the turn and walk computer model. They should adjust the sliders to modify the simulation and see how the outcomes change. If they have time, they should examine the code. Small groups should then create a Venn diagram comparing the model to the actual situation. Come back together as a whole group and share smiliarities and differences between the model and reality. If students go there, you can also discuss the difference between their written instructions from the catch and the code from the turn and walk model.
Review	Watch the complex systems video from MIT. Ask students to discuss with their table partners: ● how what we just did might relate to this video ● why scientists might want to use computer models ● What things are good about the modeling process? ● What might be bad about the modeling process?
Assessments	This assessment is intended to be formative before beginning a student developed model on a complex adaptive system directly related to science content.

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Posttest Questions (same as pretest questions)	What is a model? Why would we use modeling in STEM fields? What can be used to make a model? What is code as it relates to computers? What models do you remember making and why did you make them? Did this modeling system help you understand how the variables interacted more?
Standards	NGSS -MS-ETS1-4 CCSS -SL.8.5 -7.SP.1 ISTE -1c
Crosscutting Concepts from NGSS	Patterns Cause and effect Systems and system models
Science and Engineering Practices from NGSS	Asking questions and defining problems Using mathematics and computational thinking Obtaining, evaluating, and communicating information

*More resources on this available at projectguts.org.