Lesson Plans   CMST Institute

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Create and Identify Function Rules

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Iacchetta's Lesson Plan HW #2

You should submit this form in addition to any computer generated files/documents/models to your group folder on Angel. Please create a .zip file and upload the group of files as a single archive.

Name: Dave Iacchetta
Grade level(s)/Subject taught: Algebra A; grade 9
Objectives: Students will be able to create and identify function rules from a set of inputs and outputs (table).

Please provide a rich **one-page, single-spaced**, description or a *vision* of your best thinking on a way or ways you might teach the planned lesson. (approximately ½ page for the teacher role, ½ page for the student role). Also, construct a tentative rubric that you might use with your students (see example)

Items to include in your lesson plan: (Choose your discipline/concepts from your own area).

1. *Write* the <u>Mathematical Concept</u> or "key idea" that modeling will be used to teach: (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

Mathematical modeling Computations

and/or…

1b. *Write* the <u>Science Concept</u> or "key idea" that modeling will be used to teach: (e.g. Organisms maintain a dynamic equilibrium that sustains life).

Materials:

"…a rich **one-page, single-spaced**, description or a *vision* of your best thinking…"

Prompts:
1. How will you assess the prior knowledge of the student?
2. How will you begin the lesson?
3. What are the teacher and students doing every 5-10 minutes? (Teacher Actions and Student Actions
4. How will you assess the learning for the lesson?

Using ___SHODOR Activity- Function Machine, Linear Function Machine___ I plan on having my students…
(software / modeling package(s)

Students will be able to create and identify function rules from a set of inputs and subsequent outputs (table). As the introduction to the first lesson I will have students (as a whole group) first look at a linear equation or function rule. Then I would have them create a table of values from the rule. Second, I would have them look at a table of values and try to determine (logically guess) the function rule that created the data (write the rule). Third, I would have them create, individually, their own simple function rules and create a table from their rule. They should keep this private. Lastly, I will have them work in groups of 2-4 students each taking turns being the leader. The leader will field student guesses (inputs) using the function rule they will provide the output values. This will be repeated until they guess the function rule correctly. The leader role is rotated giving everyone in the group a chance to lead. On the second day, I will then have the students play against the Shodor Function Machine or Linear Function Machine. Students will try to determine the function rulepicked by the program. Eventually students will compete for the correct answer providing the least amount of inputs. Assessment will be the success of the student guesses and the amount of inputs it takes.

Rubric

3- Students finding the function rule with 4 or less input values, explaining their thought process (attempts)

2- Students find the rule with 4-8 input values, expaining thought process (attempts)

1- Students can explain their thought process (attempts) but cannot arrive at the correct function rule

0- Students cannot explain thought process or make logical attemptsto solve the function rule.

Example: "I was thinking about beginning the class on [modeling X] by using the overhead to ask students what they know about X. From this brainstorming session, I might ask them to get into groups and discuss one or more of the ideas they gave me. After about ten minutes, I would have the students give their ideas on X and write them down on a transparency so they would be able to see them for the entire hour. From here, I would provide a 10 to 15 minute demonstration of the basics of using _____modeling software. I would use an conceptual example that they would find familiar with such as getting a cold and how it is transmitted. From here, I would have students at the computer stations using a prepared guide or tutorial to get them started on basic software usage. I expect that is a short time a number of students would "catch on" rather quickly and be able to help others. ……………….. By the third lesson, I suspect that most would be well on their way to development of their own or small group models using the _____software. My plan of assessment would probably be a group model so they would gain more confidence in using the software in a meaningful way. After the second or third lesson, I would ask them to choose from a list of thematic or topic areas that fit the software nice and develop a model using the technology. As a product, I may have partners share their model and describe to other small groups how it works. The rubric I design would be general at first so that I might see what kinds of the products the student were capable of creating. From the prototypes, I would hone my rubric to make the modeling product as challenging as possible without making it too difficult." Etc…