Generic Lesson Plan Template

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: Liz Helbig-Watkins
Grade level(s)/Subject taught: Math B
Objectives: To explore Exponential Functions and Graphs.   To know how to use the compound interest formula to calculate the amount of money in an   account.

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 Mathematical Concept 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)

Key idea: 4A Represent problem situations symbolically by using algebraic expressions
        4B Manipulate symbolic representations to explore concepts at an abstract level
        4C Choose appropriate representations to facilitate the solving of a problem.
        4K Use exponential functions to model real-world relationships

and/or…

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

Materials:
      Stella Model on compound interest
      Book

"…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 ____Stella_____ I plan on having my students…
(software / modeling package(s)

 In this lesson we will explore the compound interest formula. I will start class by asking students if they have a savings account of any type. Then I will ask them "What are all the factors that you can think of that will influence how fast your money will grow? I will try to see if anyone remembers the simple interest formula they learned in math A.   Next I will pose a question to them, " When you were born, your parents deposited $1000 into a savings account for your college education. The only time they deposited money for you was at birth. The interest rate they invested at was fixed at 5%. Do you think you will have enough to go to college?" 5 minutes

Using the STELLA model I will explore the given scenario through tables and graphs. I will then change the scenario by inputting different dollar amounts and different rates. As we change the different rates we will talk about the different ways you can invest your money and how the rate also changes. (i.e. money market, stocks, etc…) I will then ask them how long they think it would take to become a millionaire exploring different rates and deposit amounts.10 minutes

I will then tell students to take out their notebooks and we will take notes on Exponential Functions.   We will discuss compound interest(and the difference between simple interest) and do practice examples using the compound interest formula. Then we will talk about the graph of an exponential function. 15 minutes.

The students will then have some problems out of their book to work on. As they are working I will circulate around the room answering and asking questions to check for understanding. 15 minutes

We will then finish the lesson by reviewing exponential functions and the compound interest formula. Students will be given homework out of their book. The ticket out the door will be to write the difference between simple interest and compound interest and to describe what the graph of compound interest looks like. 5minutes

RUBRIC

3	Students are able to use the compound interest formula and are able to describe an exponential function and its graph. Students participate in class discussions and complete all bookwork.
2	Students are mostly able to use the compound interest formula and are mostly able to describe an exponential function and its graph. Students participate in most of the class discussions and complete most of the bookwork.
1	Students are somewhat able to use the compound interest formula and are somewhat able to describe an exponential function and its graph. Students participate in some of the class discussions and complete some of the bookwork.
0	Students display very little or no understanding of the concept. Students do no participate in class discussions or complete some of the bookwork. They have little or no understanding of the compound interest formula and of exponential functions and they are not able to express it in their own words.

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…