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 A
Objective: To understand a quadratic equation and its graph. To have students explore and discover what the a, b, and c mean in a quadratic equation using the graphing calculator and also identify vertex.

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)

The students will use mathematical modeling/multiple representation to understand patterns, relations and functions.

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:

- Worksheet
- Graphing Calculator

"…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 _____ I plan on having my students…

(software / modeling package(s)

Students will start with a do now on graphing a quadratic equation using a table.
We will then go over the do now and discuss what makes this different from the lines we have graphed before and define it as a quadratic equation and a parabola.(graph not a straight line and the equation has an x squared term) 10minutes

Next I will pass out graphing calculators. Then I will show the students how quickly they could have used a graphing calculator to make tables and graphs of the equations by using the problems from the do now. I will review how to do this by walking the students through how to use the y= , window, table and graph keys.
5 minutes

Once students know how to use the graphing calculator to graph equations they will then work independently on a worksheet that will have them explore different quadratic equations. As students work I will walk around the room to answer questions and check for understanding. 35minutes

After students have worked through the worksheet we will then summarize their findings. As we refine what they found out we will enter the necessary information into our notebooks. (parabola, vertex, standard form, the role of a, b, and c.) 15 minutes

I will then collect graphing calculators and students will be assigned homework out of the text book.
For the ticket out the door, the students will be given an equation and they must describe its graph without graphing (just using a and c). 5 minutes

RUBRIC

3	Students will recognize and clearly describe and generalize patterns in quadratic functions. Students will participate in class discussions and complete worksheet.
2	Students are able to recognize and clearly describe the patterns in writing, but do not participate in class discussion or complete most the worksheet.
1	Students are able to recognize some patterns, but are unable to clearly describe the patterns in words and class discussions or complete half of the worksheet.
0	Students display very little or no understanding of the concept. Students do no participate in class discussions or complete some of the workshee.

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…