I. **Instructional Goals**
   - This lesson will give the students an understanding of the nine planets in the solar system and let them manipulate a database.

II. **Rationale**
   - This lesson is important because it lets students compare and contrast the nine planets. They will appreciate how each planet is unique in its own way. They will use a database to easily sort the information and come to conclusions about how the solar system is arranged.

I. **Objectives**
   - Students will compare and contrast the planets of the solar system
   - Students will use a database to organize and sort information
   - Students will use the database that they created to come to conclusions about the solar system.

II. **Resources**
   - Computers, chalkboard, index cards, research materials (the Internet, or books from the library or classroom), paper, pencils, projector for computer

III. **Procedures**
   - **Readiness/ Motivation for Lesson** Allotted Time: 50 min
     - To activate students’ prior knowledge, ask them what they know already about the nine planets and the solar system. Have they studied the planets in the past? Does the solar system fascinate them? Do they think that other planets can sustain life? Is Pluto really a planet?
     - The lesson can connect to previous lessons about the Big Bang Theory and the formation of the solar system. It can also tie into stars, constellations, and galaxies.
     - To provide necessary background and interest, tell the students that they will be completing a database project about the solar system’s nine planets. Tell the students that they will be local database designers who are competing for best local solar system database. The winning database will be submitted to the local space agency who has a website for elementary students. The winning database will be posted on the website for all to see.

   - **Focus of Lesson** Allotted Time: 2, 50 min classes
• This lesson is written keeping in mind that there are 4-6 computers in the classroom

Step-By-Step Procedures:
• Gather resource materials from the library for your classroom and prepare database fields using the categories listed below on one computer.
• Divide the students up into nine groups.
• Assign each group a planet. Tell the students that they will be researching their planet and that they will be looking for the following information: Average Distance From the Sun, Estimated Temperature in Fahrenheit, Number of Moons, Length of Year, Atmosphere, Gravity at Surface, Type of Surface (rocky, icy, gassy).
• Assign each group to a computer with Internet access so they can research using the Internet. The remaining groups should research using materials from the library. Rotate every fifteen minutes.
• Have the students write down the answer to each category on an index card.
• Have a prepared database on one computer and one at a time, have each group enter their data into the prepared database.
• Give students a prepared Think Sheet, and by group, have them answer the questions at the computer. Rotate every ten minutes. The Think Sheet should involve questions about sorting the fields and making connections between the planets.
• The students will answer the Think Sheet accurately to show that they are learning. They will also write a paragraph stating how the planets are alike and how they are different from one another.

C. Closure to Lesson Allotted Time: 50 min
• To tie the lesson together at the end, show the database to the whole class using a projector and have each group talk about their planet to the class. Sort through each field and ask or tell the students about how the planets are alike or are dislike one another.
• Tell the students how the characteristics of each planet go together with the Big Bang Theory. Discuss the controversy surrounding the planet, Pluto.
• The class can make a bulletin board that describes their findings, if you feel the need. For this step, you would need construction paper, markers, glue, stapler, and crayons

D. Assessment
• Look over each database field to make sure the correct information has been added.
• Have the students write to you about how the group work was accomplished. If the group did not work together, take that into consideration
• Read and grade the paragraphs that the students write. Are the writings consistent with the findings?
• Have each student make up his or her own planet. The planet should be placed somewhere in the solar system. Do the characteristics of the made up planet match the characteristics of other planets in that location? If not, the students did not grasp the concept you were trying to convey.

Adaptations to this Lesson Plan:

• For a one-computer classroom, you can have the students research all of their information out of books from the library, and then have the groups enter their information into the prepared database one group at a time.
• For a computer lab, students can research on the Internet by themselves. When that work has been accomplished, the groups will come together to compare and contrast their findings, and then come to a conclusion. They will then write their results on the index card and enter their information on the prepared database.

Assistive Technology:

• A special joystick can be used for students that don’t have very good control with the mouse. The joystick, when pushed, does not send the arrow or cursor flying all over the place. The cursor or arrow goes slowly so that the user can navigate the database and Internet easily.
• For students with visual impairments, a keyboard with big keys and big letters on the keys can be used. The user will not have to strain to read the keys or find the keys.
• For students who have a hard time paying attention or remembering instructions, a tape player or recorder can be used, especially if the student can’t read written instructions. The instructions can be recorded and played back for the student. The teacher won’t have to repeat him or herself all the time.

Elaboration of NteQ Model:

• Specify Objectives: Included above in the lesson plan
• Computer Functions: Use a database to sort and interpret information. It can also match, compare, and contrast certain items.
• Specifying A Problem: Included in the above lesson plan (contest for best database…)
• Data Manipulation: They will enter and sort items in the database. They will complete a Think Sheet using the data.
• Results Presentation: Show the database to the class via projector. The groups will give a small presentation to the class about what they learned from researching their planet.
• Activities At The Computer: Students will research using the Internet and enter information into a pre-made database. They will then sort through the database to answer the questions on the Think Sheet.

• Activities Prior To Using The Computer: The teacher will discuss the solar system and generate a discussion. The students will then break into groups and research the planets using library materials.

• Activities After Using The Computer: The students will discuss the information they found as a class. They then have the option of making a bulletin board of their findings for the classroom.

• Supporting Activities: The students can help write test questions, read the planets chapter in their science book, or make up their own planet. When making up their own planet, students should think about where in the solar system they are going to put the planet, and what characteristics that planet should have for being in that part of the solar system.

• Assessment: The assessment will be a paragraph that each student writes about what they learned about the solar system. You can also assess the students on the planet they make up. The made up planet should be similar to other planets that would surround the made up planet. If it is not similar, the student did not learn what he or she was supposed to learn.

This lesson was adapted from the lesson plan on the following website:

http://www.dpi.state.nc.us/Curriculum/computer.skills/lssnplns/database/grad6312.htm
from the state of North Carolina’s public education website.