The purpose of this project is to integrate content from YOUR ENTIRE MIDDLE SCHOOL SCIENCE EXPERIENCE and apply it to an independently planned and carried out science experiment. We will spend the next three weeks researching, designing, conducting, and analyzing our experiments, culminating with a presentation. Each student will choose either a group of two students or work independently. Each student will contribute to the project.

Each group/student is responsible for materials needed to complete the project. I will supply all glassware and miscellaneous science materials in stock. Your group/student needs to supply everything else.

The project must be presented on a tri-fold poster board. All written parts of the project must be typed and mounted on the board. Including pictures is an excellent idea also! One member of the group/student will need a flash drive to save your work as the computers in the classroom do not print. Any work completed on these lap tops must be saved and printed elsewhere. Make sure you discuss these requirements with your group beforehand as incomplete projects will receive a failing grade.

The project will be broken down into **five** main parts:

1. Planning-
   1. 3 days
   2. Outcomes
      1. project design due **Thursday 5/7/15**
         1. **Includes: title, variables, brief procedures/methods, timeline, materials needed**
2. Introduction, hypothesis, experimental design, and methods
   1. 3 days
   2. Outcomes
      1. Introduction (background information)
         1. Around 250 words (2 paragraphs)
         2. You must include background on the subject you are researching, why you chose the project, what you hope to find out, and why you feel this is an important subject to research.
         3. Must cite at least **two** scholarly sources (one can be the textbook)
         4. Include research question at the end
      2. Hypothesis
         1. A statement in “If… then” format detailing what you think will happen.
      3. Experimental design
         1. You must test three levels of your variable (two levels of IV and one control is acceptable)- this is written in paragraph form
         2. All materials listed
      4. Methods
         1. List **ALL** steps for the experiment
         2. Include a schedule with exact times and amounts
3. Experiment
   1. 3 days
   2. Outcomes
      1. All materials must be cleaned at the end of every class
4. Results, Data analysis, and conclusions
   1. 2 days
   2. Outcomes
      1. Results
         1. At least one graph with results
         2. At least one data table with results
      2. Data Analysis
         1. 250 words (2-3 paragraphs)
         2. Critical analysis of the data
            1. What data did you get?
            2. Why did you get it?
            3. Did you expect it?
      3. Conclusion
         1. 250 words (2-3 paragraphs)
         2. Summary of findings
         3. A statement of the outcome of your work
5. Presentation
   1. Tri-fold board
   2. All written sections of the experiment typed
   3. Data represented (tables/graphs) – may be hand drawn or computer generated
   4. 3-5 minutes (Practice with a timer!)
   5. All students must participate
6. Paper
   1. Your paper will be very similar to your presentation
   2. You will have different guidelines and a different rubric

**Timeline**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4. Planning*- Report to Rm 258- Science Classroom-*  **Contract Due** | 5. Planning- *Report to Rm 316- Computer Lab* | 6. Planning- *Report to Rm 316- Computer Lab* | 7. **Project Design is Due.** *Report to 316*  Write intro/hyp./ exp. Design and methods draft | 8. Intro- *Report to Rm 316- Computer Lab* |
| 11. Intro- *Report to Rm 258- Science Classroom* | 12. **Adventure Science Center Field Trip** | 13. Experiment- *Report to Rm 258- Science Classroom* | 14. Experiment- *Report to Rm 258- Science Classroom* | 15. Experiment - *Report to Rm 258- Science Classroom* |
| 18. Results- *Report to Rm 258- Science Classroom* | 19. Results- *Report to Rm 316- Computer Lab* | 20. Presentations  **PAPER DUE** | 21. Presentations  **PAPER DUE** | 22. **Field Trip- Kentucky Kingdom** |
| 25. No School- Memorial Day | 26. **Field Day/Talent Show**-Make up Presentations  **PAPER DUE** | 27. ½ Day of School |  |  |

**Grading Rubric**

|  |  |  |
| --- | --- | --- |
| **Item** | **Due?** | **Percentage** |
| Accountability log | Each day | Classwork grade \*1 |
| Project design | Thursday 5/7/15 | Test grade \*2 |
| Project presentation | 5/20-21/15 | Test grade \*2 |
| Paper | 5/20-21/15 | Test grade \*2 |

**Presentation Rubric**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** |
| **Poster** | Incomplete | 2 aspects of experiment missing | 1 aspect of experiment missing | Some sections clearly labeled. | Neat, professional, all sections clearly labeled. |
| **Experiment**  **and written sections** | Incomplete | 2 major aspects missing | 1 major aspect missing | All sections complete. Word, vocabulary, data requirements mostly met. | All sections complete. Proper use of vocabulary. Data tables and graphs are neat and properly labeled. All sections meet written requirements and are typed. |
| **Explanation of the “SCIENCE”** | No scientific connection | Minimal scientific connection | Briefly explains process behind experiment. No supporting data. | Explains  process behind experiment. Little supporting data. | Explains experiment fully, complete analysis of data, critical thinking present. |
| **Delivery** | No presentation | One group member participates. Presentation is below 2 minutes long | Some group members participate. Presentation is below 2 minutes long | Some group members participate. Presentation is between 3 and 5 minutes. Group members use poster and props to help aid in explanation | All group members participate. Presentation is between 3 and 5 minutes. Group members use poster and props to help aid in explanation |

**Accountability Report:**

|  |  |  |
| --- | --- | --- |
| **Date** | **Expectations** | **What I accomplished** |
| **5/4/15** |  |  |
| **5/5/15** |  |  |
| **5/6/15** |  |  |
| **5/7/15** |  |  |
| **5/8/15** |  |  |
| **5/11/15** |  |  |
| **5/12/15** |  |  |
| **5/13/15** |  |  |
| **5/14/15** |  |  |
| **5/15/15** |  |  |
| **5/18/15** |  |  |
| **5/19/15** |  |  |
| **5/20/15** |  |  |
| **5/21/15** |  |  |
|  |  |  |

**Paper Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Section** | 1 | 2 | 3 | 4 |
| **Introduction** | 3 aspects missing | 2 aspects missing | 1 aspect missing | -2 to 3 paragraphs  -at least 2 sources cited  -few grammatical errors  -variables and hypothesis listed |
| **Methods and Materials** | 3 aspects missing | 2 aspects missing | 1 aspect missing | -Methods in list form  -Materials in list form  -Clear directions  -few grammatical errors |
| **Data/Results** | 3 aspects missing | 2 aspects missing | 1 aspect missing | -Data presented in a table  -Data graphed  -Axes labeled  -Neat presentation |
| **Analysis** | 3 aspects missing | 2 aspects missing | 1 aspect missing | -2 to 3 paragraphs  -Explanation of data with reasoning for why you have the data you have  -few grammatical errors |
| **Conclusion** | 3 aspects missing | 2 aspects missing | 1 aspect missing | -2 to 3 paragraphs  -Recap of the experiment  -your findings  -few grammatical errors |

**Project contract- Due Monday, May 4, 2015**

By signing this contract, you agree to:

1. Be a contributing member to your group
2. Be respectful to your group, other members of the class, and Ms. Porter
3. Use class time well
4. Turn in all products
5. Keep work areas in class clean

I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , by signing this contract, agree to all of the listed requirements for the project.

Student signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group members:

1. Why do you believe this group will produce a solid project?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What will each member do to contribute to the group?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. How will you deal with conflict if it arises?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_