**2013 Transitional POL Vincent Schafer**

**Remote Control Race Cars**

**1.** **Overview**

Students will work in groups to create remote controlled cars to compete in competitions. Students will have to create everything other than the electronics. This will include the chassi, body, and any additional pieces that they could like to include. The final product will be judged not only on speed and design, but also on creativity involving the aesthetics of the car.

**2.** **Essential question**

What is the best design for a remote control car that can successfully compete in racing competitions?

**3.** **Content covered**

Engineering:

Testing different car designs to decide on a shape that will provide the least air resistance. Experimenting with materials to build a chassis that will be both durable and lightweight. Putting all of the electronics into the car and setting them up will present its own challenges.

Art:

Part of the grade for the project will include that the car looks good. The aesthetics are a huge part of this car, however they come secondary to making the car run and run well. The car will need a unique paint job and color scheme. The car needs to show creativity and individuality.

**4.** **Skills developed**

Students will have to work together in groups to build one product. the complexity of building a remote control car will for the group to collaborate and teach each other. In addition students will learn to test prototypes and interpret data to use in their design process.

**5.** **Adult connection**

This project will give students knowledge about physics and engineering relating to the forces acting upon a moving vehicle. Engineering will teach students about how a car is constructed and how it works, even though it is only a remote controlled car there are similar parts. Working in groups will also force students to work together and collaborate. Building only once car will force students to compromise and make sacrifices.

**6. Products**

Each group of students will create:

 -Functioning remote control car

 -Slideshow of photos documenting production process

 -Final blueprint drawings

-2-3 conceptual blueprint drawings

 -2-3 prototype models

**7.** **Exhibition**

To exhibit this project students would be required to photographically document the process that they went through while building their remote control car. Students will also be required to speak toward different aspects of their design and the purpose of certain equipment. students will demonstrate their understanding with the help of their car and blueprints.

**8.** **Assessment**

Students will be assessed on the following:

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|  | A-B | B-C | C-F |
| Car Design | The car clearly demonstrate that the group revised their design and experimented with different designs. | The car shows that the group revised their design, but did not experiment enough to achieve the best design.  | The car has not been revised and the group did not experiment with different car designs.  |
| Group work | The student worked together with their group members and made compromises to create a functional car. | The student worked together with their group members, but did not contribute or acknowledge other group members ideas.  | The student did not work together with their group members and did not contribute or acknowledge other group members ideas.  |
| Final Blueprints | Final Blueprints are very neat and organized student obviously spent a very long time on them. | Final Blueprints are readable but are difficult to understand, student did not spend a lot of time working on them.  | Student did not spend time on the final blueprints. Blueprints are very messy and illegible. |
| Final Presentation | Student attended final presentation and explained project to guests with the help of R/C car and blueprints. | Student attended final presentation and explained their project to their guests, but did not clearly demonstrate understanding. | Student did not present or interact with guests or did not show up to final presentation.  |

**9. Calendar**

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| 1st Monday | Field trip to go-kart ring to look at design of compact cars and to get psyched for the project. |
| 1st Friday | 2-3 Drawn drafts of car design concepts with body shape and chassis design. Several ideas for materials should also be labeled and submitted. |
| 2nd Friday | 2-3 Original designs should be built into rough draft models to test for design flaws and functionality.  |
| 3rd Friday | Rough draft models should be tested and a final design should drawn up and decided upon as well as a list of materials to be used. |
| 5th Friday  | Full body of car should be built, painted, and prepared for the installment of electronics. |
| 6th Friday | Electronics should be installed and functional. |
| 7th Tuesday | Car should be tested, painted, and ready to race on Friday.  |
| 7th Thursday | Car operator should have practiced and be ready to race on friday. |
| 7th Friday | Race day to determine extra credit and end project.  |