

# Memo

**To:** Lonny Grafman  
**From:** Chris Alston, Andre Bernal, Julian Quick, Jesse Zipursky  
**CC:** Lonny Grafman, Laurel Tree Charter School  
**Date:** 12/6/2012  
**Re:** Section 4: Decision Phase

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## **Purpose**

The purpose of this memo is to state the final solutions for the design project for Laurel Tree Charter School's lab models on Newton's Three Laws.

## **Summary**

In this Section, the decision phase, the alternative solutions were analyzed using a Delphi matrix based on the client's set criteria to give the three best final solutions. The final solutions were selected based on the highest rating in the Delphi matrix. The final solutions chosen include the Balloon Rocket, Inclined Plane, and the Loop de Loop Rollercoaster. The Loop de Loop Rollercoaster will be altered to include parts of the Centripetal Acceleration and Tangential Velocity Rollercoaster due to the similarity of the two models but also the measurability of the one over the other.

## **Discussion**

The final solutions decided for Project GREENTree were analyzed using a Delphi matrix with the client's set criteria. The set criteria includes sustainability, educational value, accuracy and precision, measurability, mysteriousness, safety, durability, storability, and inexpensive. Each set criteria were given a weighted rate constant based on a scale of 1 to 10, where 10 is the highest score given. Each alternative solution was given a score from 1 to 50, where 50 is the highest score possible. Durability and mystery were weighted the highest with weighted rate of 9. The alternative solutions that scored the highest in the Delphi Matrix are the Balloon Rocket, Inclined Plane, and the Loop de Loop rollercoaster. The Balloon Rocket scored the highest matrix score with a score of 2390, followed by the Inclined Plane with a score of 2173 and the Loop de Loop with a score of 2103. Since the Centripetal Acceleration and tangential Velocity Rollercoaster demonstrate a similar design and conceptual viewpoint as the Loop de Loop model, the two models will be integrated to form one model that includes certain aspects of both designs.

## **Recommendation**

The three final solutions should be implemented on the basis of scoring the highest Delphi matrix score in relationship with the client's weighted criteria. These solutions include the Inclined Plane, Balloon Rocket, and Loop de Loop with elements from the Centripetal Rollercoaster. Feedback on this Section is encourage on our decision making process and its context.