ROCKET CAR-MATICS

Christopher Maxwell

Edit Microsystems

TARGET AUDIENCE: Foundation Phase, Intermediate Phase, Senior Phase, FET

DURATION: 1 hour slot

MAXIMUM NO. OF PARTICIPANTS: 32

MOTIVATION

This workshop brings learners to observe their mathematics in a practical example. Introducing one key part of the mathematics curriculum for each phase in a group environment. It emphasizes the importance of mathematics in an exciting real-world example, the Bloodhound SSC project.

Bloodhound SSC is a car that has been designed to travel faster than the speed of sound as well as break the world land-speed record. The relevance? This car will be run exclusively in South Africa and the driver of the car, Andy Green, apart from being an RAF fighter pilot also has a first-class pass in mathematics from Oxford University. The project is driven by a worldwide education program to inspire a generation and bring mathematics alive. This workshop looks at the mathematical fronts of the car for a range of levels. It has worksheets using mathematical software on an interactive 'SMART Board'.

CONTENT

There will be 8 groups of 4 people per group in 4 categories. Each category represents a specific education phase (foundation, intermediate, senior and FET).

Each phase will develop the mathematics of a specific area of the car. The main topics covered by the stages will be:

Foundation: Recognition of geometrical shapes and combining them to build one large shape.

Intermediate: Proportions and Percentages and ratios such as using fractions and decimals.

Senior: Interpretation of graphs, students will be looking at number lines and interpreting them with a graph's of velocity and acceleration. Also some graph sketching is involved in this level.

FET: Solving tables of data and differential equations to calculate statistics of the car, as well as solving stability and small matrix equations of the rocket car system.

Each phase will have time to plan in their group which strategy to follow in order to solve their particular problem. After planning the group will have time to put their work on a SMART Board. This will be visible to all and will showcase the problem solving taking place.

Maxwell, C. (2013). Rocket car-matics. In Z. Davis & S. Jaffer (Eds.), *Proceedings of the 19th Annual Congress of the Association for Mathematics Education of South Africa*, Vol. 2. (pp. 48 – 49). Cape Town: AMESA.

There are two parts to the workshop, each part will take a total of 30 minutes.

ABSTRACT

The Bloodhound SSC (Super Sonic Car) project to break the world land-speed record is taking science and mathematics forward to inspire a generation to think differently and scientifically about the world we live in. Using the mathematics of the Bloodhound SSC, this workshop will explore the shapes, proportions and equations to give a successful mathematical solution to a stable system.

Build a Rocket Car using mathematics or simply 'Rocket Car-matics'. This workshop takes snippets of the mathematics curriculum from each stage ranging from Foundation to FET level and combines them to formulate a 'Rocket Car' system which can speed or sink its way to a finish line. Learners will work in groups of 4 to provide an applicable solution using symmetry and geometry, percentage and proportion, graph sketching and interpretation, as well as stability and matrix equations. Come put your mathematics to a good test and build a stable system with 'Rocket Car-matics'.