An Experiment in Education
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“To provide leadership for reform and innovation in science and mathematics education .....”
A 3 Year Evolution

Year 1
Digital Literacy

Year 2
Supporting student-driven projects

Year 3
Integration into ASMS

3D Printing
Programming
Game Design
Microprocessor Control
3 Projects
Rocket Powered Vehicle

A project founded during the International Science Fair of 2013 at the Australian Science and Mathematics School. An attempt to beat the Guinness World Record for fastest model rocket powered vehicle through 3D printing technology.

September 2013

2x C class model rocket engines

129 grams

154 km/h

Rocket Powered Vehicle 2

2x D class model rocket engines

October 2013

86 grams

255 km/h

Chasing after the title of fastest model rocket car, the team brought out their second generation design just one month after the first. It was able to travel over 100 km/h faster and was 33% lighter than the previous generation.

Rocket Powered Vehicle 3

November 2013

2x D class model rocket engines

73 grams

235 km/h

Less than half the mass of the original RPV

The next generation rocket powered vehicle

61 grams

Chasing after the title of fastest model rocket car, the team brought out their second generation design just one month after the first. It was able to travel over 100 km/h faster and was 15% lighter than the previous generation.

GRAPHITE RPV 4-E
<table>
<thead>
<tr>
<th>Technology</th>
<th>Education Programs</th>
<th>Design</th>
<th>Development</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam</td>
<td>Dave</td>
<td>Ed</td>
<td>Oscar</td>
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<td>Oscar</td>
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<td>Bill</td>
<td>David</td>
<td>Mitchell</td>
</tr>
</tbody>
</table>
Determining maximum velocity from a surge

V(t) = at^n e^{-bt}

where n is a positive integer.

"n" affects the curvature of the function to the maximum value.

The propellant weight is approximately 20% of the actual rocket car, hence the value of n would be > 1 however less than 2.

For a standard surge regression, the function is modelled by

v(t) = ate^{-bt}

s(t) = \int v(t) dt = \frac{3}{b} \frac{x}{v_{\text{max}}}

This surge regression has a maximum at t = \frac{1}{b}.

Albeit different to the standard regression, it provides a good indication of when max. velocity occurs.
Project Tranquility and the Innovation Space
SFE order 1199463 -- Export Controlled Item

SparkFun Customer Service cservice@sparkfun.com 5/30/14

to sivam

Hello,

Your recent SparkFun order contains 1x SEN-11345: Geiger Counter. This item is export controlled by the United States government. Do you intend to sell or send this item to anyone in any of the following countries: Cuba, Iran, North Korea, Sudan, or Syria? Please let me know at your earliest convenience, and thank you for your help.

Best Regards,

Maya Kleinbort
Customer Service Representative
SparkFun Electronics
http://sparkfun.com
303.965.2954
1 On Board Computer (Raspberry Pi)
2 Micro Controllers (Arduino)
3 Cameras (Hi Resolution, Downward facing Low Res, Infrared)
7 Sensors (Radiation, Magnetic Field, Humidity, Temperature, H,O,Co2)

+Battery pack, Hard Drive
“I was very impressed with the student’s understanding of the challenges they faced, their proposed solutions to these challenges, **how far they’d travelled** before needing help ....

It would put a lot of final year engineering students to shame....!”
They have been the only group of school students who decided to completely design a CubeSats from phase zero. Their initiative is a worldwide first in schools education and we have been very proud to support them.
How schools kill creativity
Why Instruct?
@ASMS  60% are now able to 3D print.

From 4 > 200 of students Some of them have acquired high level of expertise (from a survey with 109 respondents out our 350 odd students)
Infection Model

Figure 1: Plot of the modified network exhibits degree stratification. The light blue vertices represent susceptible airports. Simulations start with 10 airports with infectious individuals. The edges these individuals can travel on are colored green. The separation of the tight clusters in the center from the rest of the graph suggests that the network is highly stratified in the types of connections between airports.
If you scratch the surface...
Project Tranquility: Cubesat

Project Tranquility is the beginning of a new style of student-driven initiative in South Australia.

GRAPHITE Flipboard Magazine

"We're a bunch of nerds interested in tech..." This magazine is all that its tagline...

G1 Graphics Calculator

The second app in our GRAPHITE series. G1 is a graphics calculator that allows you to:

GRAPHITE RPV

As a result of our thirst to find out why it's suddenly cold in our area and the question:

This app was passionately crafted by GRAPHITE in Adelaide, South Australia.
OMG I’M THIRSTY: Kaviya Kalyanasundaram with her moisture-monitoring invention.

Texting plant sending right message

AMY MORAN
GUARDIAN MESSENGER

HELPING the elderly and farmers is at the top of young inventor Kaviya Kalyanasundaram's agenda. The Australian Science and Mathematics School student is working on two projects after winning a $5000 grant to build prototypes of a voice-controlled wheelchair and what Kaviya calls a “texting plant”.

The texting plant, which monitors the moisture in soil and notifies the gardener when the plant needs water, won Kaviya the Junior Technology Prize at the Royal Adelaide Show in 2011. She has since modified it and is working on further improvements, such as Bluetooth connectivity and making it solar powered, to get the device ready to sell.

Kaviya, 15, got the inspiration for the texting plant after talking to her parents Kavitha and Kalyanasundaram, both agriculture professors. Kaviya, of Mitchell Park, hopes to study electronics or electrical engineering.
StormCell - here is known as KMCSBOOKING is a real time people management software. It handles 3000 jobs a month - roughly 300 jobs a day.
What we learnt
If there is interest learning happens
Making is Learning
Natural Interest in Technology
Knowhow is infectious
Create Conditions for learning
PROPOSAL to ASMS
http://www.inovspace.com

http://www.phonelabs.net

https://about.me/sivam
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South Australian Department for Education and Child Development
T/A South Australian Government Schools
CRICOS provider number 00018A

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