Student Handout #1 – Collective Learning and Technology Today

Read about the following modern inventions and answer the questions that follow. Write down your answers on your own, and then compare your ideas with your Turn and Talk partner.

THE DO-IT-YOURSELF MACHINE KIT

Marcin Jakubowski built a tractor in six days. Then he told the world how to do it. He posted the building plans and a how-to video online. Jakubowski is the founder of Open Source Ecology. He is making more free instruction kits. He picked 50 machines that are important for modern life. His kits will help anyone anywhere build a low-cost version of each machine.

TALK TO THE GLOVE

Four Ukrainian students created ENABLE TALK gloves. The gloves help people with speech or hearing problems communicate with people who do not know sign language. The $75 gloves have sensors that recognize sign language. The gloves translate it into text that can be read out loud on a smartphone.

http://www.timeforkids.com/news/coolest-inventions-2012/62816

Greenshields

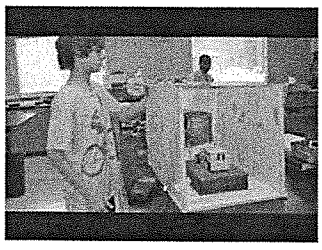
Nifty Invention By Teen Could Save School Districts Thousands Of Dollars

By *Meera Dolasia* on September 2, 2012

Illinois tween Jonny Cohen was just twelve years old when he came up with a **revolutionary** idea that would make clunky yellow school buses more energy efficient - Helping not only school districts save money, but also, the **environment**...

It all began in 2008 when Jonny, just fresh off a science summer camp at Northwestern University, was looking for something to apply his newly found knowledge of **aerodynamics** to, and found the perfect *candidate* - His school bus. Known for giving an average of just 7 mpg compared to a private car that can average about 20 mpg, these vehicles were definitely due for a makeover.

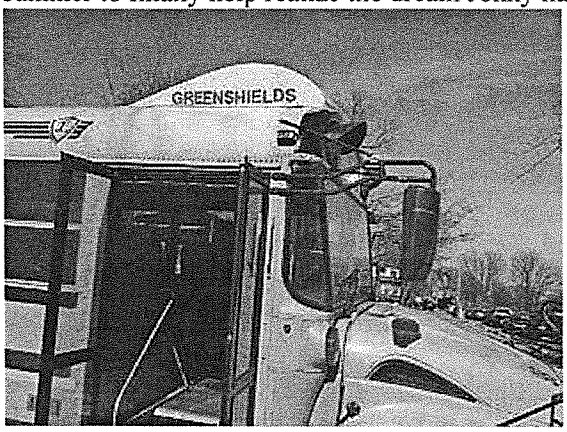
Jonny came up with the idea of attaching a **Plexiglas** shield to the front of the vehicle, which would help redirect airflow and thus make the bus more aerodynamic. This in turn, would reduce **drag** and help the bus become more energy efficient - in theory. While his science teachers loved the idea, the young boy still needed to build a **prototype** and test to see if it really worked. Thanks to his older sister Azza, he managed to obtain a $1,000 USD grant from Youth Venture, an organization that helps young social activists make their ideas a reality.



Jonny used the money to build a mini-prototype of the first '*GreenShields*' and put it to test by attaching it to a mini toy school bus and dragging it inside a **makeshift** wind tunnel that he set-up in his garage. Sure enough, the idea had merit and the young boy knew it was time to step it up and create a life-sized version.

In 2010, his sister and he decided to apply for a $25,000 USD Pepsi Refresh Grant, an initiative set up by the soda manufacturer to fund new radical ideas. With support from his community who helped vote Jonny's idea to the top 5 of the 721 hopefuls, the young boy was successful in winning the grant...

While Jonny and his team of **novice** engineers were able to build the initial prototypes, they soon realized that they needed some expert help to really get going. In 2011, the young team began to send out feelers to the local Universities to see if they could interest some experts to help them build and test the product. Not surprisingly, it was Northwestern University's Stacy Benjamin - the same teacher that had inspired him to start thinking about the project - that volunteered. She along with two of her engineering students Tim Healy and Matt Filik worked through the summer to finally help realize the dream Jonny has been harboring, since he was 12-years old.



The fourth generation GreenShields looks radically different from Jonny's original idea. Instead of a streamlined transparent Plexiglas that covers the windshield of the bus, it is a sleek, ski-jump shaped hat that gets **installed** on the roof of the bus. This design provides the same benefits but costs less to manufacture and install.

http://www.dogonews.com/2012/9/2/nifty-invention-by-teen-could-save-school-districts-thousands-of-dollars

1) What problems did each of these inventions solve?

   a) *Do-it-yourself machine kit-*
   b) *Talk to the glove-*
   c) *GreenShields-*

2) What technologies had to come first so that these inventions were even possible?

3) How can these inventions spread to other places in today's world? What are the ways people share information and technology today? List some examples...

4) So what would be different about inventions and new ideas in Era 3?

5) Collective learning, when people share ideas and teach each other to solve new problems and then record, spread, and add to this knowledge, increased during Era 3, the Age of Empires. Why do you think this happened at a faster rate than in the previous era?