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Young Inventor

Schoolboy Tim Freeman has come up with a clever idea to improve the efficiency of school buses.

Tim Freeman was just twelve years old when he came up with a revolutionary idea that would make school buses more energy efficient. This would not only save money, but also help the environment. Five years later, the schoolboy finally saw his dream come true.

It all began when Tim did a short summer course on aerodynamics, the study of the movement of air around objects. **37** He realised that the perfect candidate was his school bus. It had a very square front which meant it did not use petrol efficiently, only travelling 3km per litre, compared to a private car that can average about 8.5km per litre. He decided it was high time the vehicle was improved.

After thinking about it for a while, Tim came up with the idea of attaching a large piece of strong transparent plastic to the front of the vehicle, covering the windscreen. It would help redirect the flow of air around the bus and thus make it move forwards more easily. **38** At least, that was the theory.

While his science teachers loved the idea, Tim needed to find enough money to build a model and test it. **39** Helped by his older sister Alice, he managed to obtain a grant from an organisation that helps young people develop new ideas.

Over the next year, Tim used the money to build a small-scale model of his invention. He did tests on it by attaching it to a mini toy school bus and seeing how it performed in a little wind tunnel he built in his garage. **40** Because of this he knew he now needed to step it up and create a life-sized version that could be put to the test on a real bus.

By the time Tim was fifteen, he had set up a team of young engineers like himself, and been helped by his sister and his local community to obtain another grant to develop his idea further. While Tim and his team were able to build the initial versions, they soon realised that they needed some expert help to really get going. **41** The person who volunteered was the one who had inspired Tim to start thinking about the project in the first place. She had taught him on the summer course when he was twelve. Along with two of her engineering students she worked with Tim through the summer to finally help him realise his dream.

The final version of Tim's invention looks rather different from his original idea. Instead of a transparent piece of plastic that covers the windscreen of the bus, it is a smooth ramp-shaped 'hat' that gets fixed to the roof of the bus. **42** In tests done on virtual and real roads it has helped increase the efficiency of school bus fuel use by 10-20%. Maybe this ingenious device will eventually help other buses and even cars become more fuel-efficient!

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A	So they began writing to local universities to see if anyone would provide the advice and knowledge they needed.	**E**	He knew that was the only way to see if his design really worked.
B	This made it clear to them that the design would have to be changed.	**F**	This design provides the same benefits but costs less to manufacture and install.
C	This prompted him to look for a way to use what he had learned.	**G**	In this way, the bus would become more energy efficient.
D	The data from these were good and his idea was looking promising.		

Source: Sample Test 1, D255/01. © UCLES 2015 Cambridge English Level 1 Certificate in ESOL International.

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