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STUDENT SHOWCASE

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Street luge

Ethan Shanley

*St John's College – Hamilton**Year 11 Materials Technology whole year project**Teacher: Steve Andrew*

St John's College Technology teacher Steve Andrew asked each of his Year 11 students to design, build, and race-test a street luge. Street luge is an 'extreme' gravity-powered activity that involves riding a wheeled sledge or 'luge' down a paved road or course in a lying position. High speeds (up to 115 km/h/ 70mph) are often reached.

For Ethan Shanley the challenge was irresistible. After researching his options, Ethan settled on mild steel as being the most practical and versatile material to build his frame from. (Some other students laminated frames from wood.) Following a classroom visit from a local metal technologist, Ethan decided to use 25/40mm rectangular mild steel tubing for the frame and 25/25mm and 30/30mm square tubing for the luge's adjustable parts. Frame members were joined by brazing and the seating deck laminated from three sheets of 3mm custom board.

For his running gear Ethan used three skateboard trucks that had been widened; two in the front and one to the rear. He reasoned that having two sets of wheels in the front would help with stability when turning. Modelling and testing identified the minimum ground clearance necessary for controllability and safety.

Ethan took particular care with the painting of his luge. He used a wire-wheel and scotchbright pad to ready the metal components for priming, and filled the frame's welds to improve the finish. Two coats of silver base paint provided a good surface for four layers of near transparent candy-red spray paint. These were covered in two coats of a clear protective finish. An infrared lamp was used to bake the frame and harden its finish. The laminated deck was spray finished with the same care.

Ethan was extremely happy with the aesthetics of his finished product: "Everything complements everything."

In his runs down the track, Ethan enjoyed the fit of his luge and how it "flowed from corner to corner". On race day, students test-rode each other's luges and Ethan's was rated highly. "All the students that rode my luge were very happy with how safe they felt, how well it functioned, and how comfortable the ride was," he says.

Unfortunately, during this testing, one of the joints on the frame broke. In retrospect, Ethan says [MIG welding](#)

and gussets would have been a better way of fabricating his frame.

The Year 11 Materials Technology luge unit is profiled in the Beacon Practice case study [CP802 Street Luge](#).

Teacher comment



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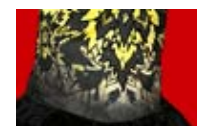

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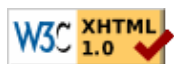
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Ethan has progressed through our Ttechnology program from Year 9 to Year 12. During this time he has developed a good range of skills. The main reason that Ethan's luge was successful was that he was prepared to research and access relevant information that was then used in the development of his luge. He had a good understanding of mechanical things and also manufacturing techniques which has assisted with the design and manufacturing of his luge.

Ethan has always put a lot of emphasis on attention to detail and high quality work. This shows through not only in his finished product but also in his folder work.



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