

RESOURCES TO SUPPORT THE ROAD TO ZERO PROGRAM: PHYSICS CHALLENGE, SCIENCE YEARS 9 AND 10

Activity overview	Victorian Curriculum learning areas	Activity duration	Suggested use
<p>See, think, react</p> <p>Students devise and conduct a series of reaction timer tests, and consider which test is the best analogue for a car driver reacting to a braking stimulus. Students then:</p> <ul style="list-style-type: none"> • explore the neurological and biomechanical steps involved • compare findings to their <i>Road to Zero</i> virtual reality test track data. 	<p>Science</p> <ul style="list-style-type: none"> • Science Understanding <p>Capabilities</p> <ul style="list-style-type: none"> • Critical and Creative Thinking 	45 – 60 minutes	<p>Pre-visit (without data comparison)</p> <p>Post-visit (with data comparison)</p>
<p>Calm down! Speed and road treatments investigation</p> <p>Using streets close to the school, students collect primary data to explore the effect of traffic calming treatments on vehicle speeds. Students:</p> <ul style="list-style-type: none"> • plan for and design the investigation • analyse the data • consider the effectiveness of the road design under examination. 	<p>Science</p> <ul style="list-style-type: none"> • Science Understanding <p>Mathematics</p> <ul style="list-style-type: none"> • Number and Algebra <p>Capabilities</p> <ul style="list-style-type: none"> • Critical and Creative Thinking 	60 – 75 minutes	Pre or post-visit
<p>Safer roads where we live</p> <p>Linked to the study of motion, students work in small groups to undertake an investigation into a road they believe is unsafe in their local area. Students:</p> <ul style="list-style-type: none"> • identify road safety concerns for different road users • suggest road design and speed limit changes to improve the safety of the road environment. 	<p>Science</p> <ul style="list-style-type: none"> • Science Understanding <p>Capabilities</p> <ul style="list-style-type: none"> • Critical and Creative Thinking • Personal and Social 	150 minutes	<p>Pre-visit to provide context</p> <p>Post-visit to reinforce learning</p>
<p>Stopping distance and speed</p> <p>This investigation will explore the relationship between stopping distance and speed. Provided with a smart spreadsheet, students:</p> <ul style="list-style-type: none"> • Manipulate variables to test the impact of different speeds and conditions on stopping distances. • compare their findings to their Road to Zero experimental stopping distance data. 	<p>Science</p> <ul style="list-style-type: none"> • Science Understanding • Science Inquiry Skills <p>Capabilities</p> <ul style="list-style-type: none"> • Critical and Creative Thinking 	45 – 60 minutes	Post-visit
<p>Road to Zero Physics Challenge – data analysis</p> <p>This resource provides suggested approaches to analysing the data collected by your students during the Road to Zero Physics Challenge program. Students will:</p> <ul style="list-style-type: none"> • Pool class data, calculate averages and graph their findings. • Consider how their virtual data compares to re-world data. • Draw conclusions regarding the mathematical relationship between speed and stopping distance. 	<p>Science</p> <ul style="list-style-type: none"> • Science Understanding • Science Inquiry Skills <p>Mathematics</p> <p>Capabilities</p> <ul style="list-style-type: none"> • Critical and Creative Thinking 	45 – 60 minutes	Post-visit