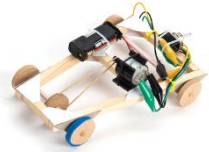


Design and Technology

Year 6

Spring Term



# Ride It!



## Challenge:

To create controlled cars or buggies that would work on different terrains.

## Competition Ideas (Choose 1)

- |   |  |
|---|--|
| 1 | Hold an open event for groups to share their final products with parents. Parents vote on the best design. |
| 2 | Upload videos of the final designs to the school website and hold a web vote to decide the best design.    |
| 3 | Gallery - Selected classes visit the class to see the final designs and vote for their favourite.          |

## The Journey

Technical Knowledge	Design	Make	Evaluate
<p><b>What is a lever, gear or pulley?</b></p> <ul style="list-style-type: none"> <li>See Y4/Y5 Technology sheets.</li> </ul> <p><b>How can lights, buzzers and motors make rides more interesting?</b></p> <ul style="list-style-type: none"> <li>A light can add visual effect to a ride.</li> <li>A buzzer can add sound to the ride experience.</li> <li>A motor allows the ride to move on its own.</li> </ul> <p><b>What is a control box?</b></p> <ul style="list-style-type: none"> <li>A control box is an intelligent box that can remember the order and duration in which switches are pressed, and the time between the presses, then play back from memory. The control boxes we are using can store up to 64 actions and allow for multiple outputs (motors, LEDs, buzzer) to be controlled simultaneously.</li> </ul> <p><b>How can we make the landscape around our ride realistic?</b></p> <ul style="list-style-type: none"> <li>Think about where cars and buggies may go. Consider the geography unit of "Coastlines" and how this terrain may affect movement.</li> </ul>	<ol style="list-style-type: none"> <li>Clearly understand the criteria for the project</li> <li>Explore a range of existing cars, buggies and motorised vehicles.</li> <li>Explore the mechanisms that make these vehicles work effectively.</li> <li><b>COMPLETE SKILLS PRACTICE</b></li> <li>As a group of 3-5, revisit individual draft designs and come up with an agreed final group design, based on the mechanics of an existing model with adaptations</li> <li>Individually create a detailed final exploded diagram with jottings</li> <li>As a group create a detailed resource list of resources needed for the final design. These may include K'Nex, Lego and electricity.</li> </ol>	<p><u>Skills Practice</u></p> <ul style="list-style-type: none"> <li>Task 1: In groups follow given instructions to make the vehicles.</li> <li>Task 2: Use the control box to move the car around as directed by the teacher.</li> <li>Task 3: Create a vehicle that would work on a range of terrain. Considering carefully the use of electronics, gears, levers and technology.</li> </ul> <ol style="list-style-type: none"> <li>Build the basic K'Nex structure.</li> <li>Adapt the landscape of the vehicle to make more realistic.</li> <li>Evaluate the functionality and realism of the vehicle and improve the design.</li> <li>Consider how recycled products could be used in design/build</li> </ol>	<p><u>Before Making</u></p> <ul style="list-style-type: none"> <li>Explore and evaluate a range of existing cars, buggies and other motorised vehicles.</li> <li>Evaluate learning from skills practice and use this to adapt the final group design.</li> </ul> <p><u>After Making</u></p> <ul style="list-style-type: none"> <li>Once the mechanism is complete, spend time creating and improving the landscape around the design.</li> </ul>

## Resources guidance (Not an exhaustive list)

K'Nex - 6 sets per class, meaning children work in groups of 5  
 Other lego and DT packs to aid exploration and construction  
 Use of Ipads, computer packages involving control and design.  
 Junk and recycled production / materials to make the landscape or cladding for the vehicle.  
 Materials to decorate the landscape

**For further teacher guidance:** <http://knexeducation.co.uk/product/simple-machines-delux>