

PowerAnchor STEM Curriculum mapping – Year 5 and 6

*NOTE: Bullet points are ACARA provided elaborations for each outcome for this year level.

Content Area	Outcome Code	Suggested Teaching Activities	Race and Chase	Helicar	Protocar	Skylap	Downforce Racer
Design and Technologies Content							
Knowledge and understanding:							
Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use <ul style="list-style-type: none"> evaluating the sustainability implications of materials, systems, components, tools and equipment, for example materials can be recycled or re-used to reduce waste; systems may benefit some, but disadvantage others reflecting on the importance of aesthetics, function and sustainability in product design, for example a textile product that gives protection and is appealing; a motor that moves a vehicle and uses a sustainable power source 	ACTDEK019	<p>Students investigate a range of materials to produce a PowerAnchor vehicle from, their sustainability and potential outcomes for any waste produced.</p> <p>Students evaluate aesthetics, function and sustainability for design solutions to PowerAnchor design challenges.</p>	✓	✓	✓	✓	✓
Investigate how electrical energy can control movement, sound or light in a designed product or system <ul style="list-style-type: none"> investigating the features of electrical devices such as switches, light globes and sensors 	ACTDEK020	Use the PowerAnchor as a case study to investigate how a switch is used to complete a circuit between a battery and electric motor.	✓	✓	✓	✓	✓
Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use <ul style="list-style-type: none"> comparing tools, equipment and techniques to select those most appropriate for a given purpose 	ACTDEK023	<p>Present students with a range of tools for manipulating the chosen materials for PowerAnchor vehicle construction.</p> <p>Students experiment with the manipulation of the materials</p>	✓	✓	✓	✓	✓

		with the supplied tools to compare their effectiveness and selected the most appropriate for use.					
Processes and production skills:							
<p>Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions</p> <ul style="list-style-type: none"> exploring the steps involved in the process to satisfy a design brief, need or opportunity investigating designed solutions from around the world to make suitable, quality decisions that meet the design brief, challenge or scenario testing a range of materials, components, tools and equipment to determine the appropriate technologies needed to make products, services or environments, for example a moving vehicle 	ACTDEP024	<p>As a class group, students unpack the PowerAnchor challenge design brief, and determine what is required.</p> <p>Using the Internet, students explore existing, real-life examples of vehicles of a similar nature to help inform their designing and meet the needs of the challenge.</p> <p>Students test supplied materials, components, tools and equipment for suitability. This may include weight for flying vehicles or how to reduce friction in rolling vehicles.</p>	✓	✓	✓	✓	✓
<p>Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques</p> <ul style="list-style-type: none"> generating a range of design ideas for products, services or environments using prior knowledge, skills and research developing alternative design ideas and considering implications for the future to broaden the appeal and acceptance of design ideas representing and communicating design ideas using modelling and drawing standards including the use of digital technologies, for example scale; symbols and codes in diagrams; pictorial maps and aerial views using web mapping service applications 	ACTDEP025	<p>Upon reflecting on existing ideas and an exploration of chosen materials, students develop a number of alternative design idea sketches that meet the needs of the challenge. These sketches should include scale and annotations of design features, such as the electric motor mounting method.</p> <p>Students test supplied materials, components, tools and equipment for suitability of</p>	✓	✓	✓	✓	✓

<ul style="list-style-type: none"> experimenting with materials, tools and equipment to refine design ideas, for example considering the selection of materials and joining techniques to suit the purpose of a product 		inclusion into their final designs.					
<p>Select appropriate materials, components, tools, equipment and techniques and apply safe procedures to make designed solutions</p> <ul style="list-style-type: none"> matching material and joining techniques to the design intention, for example accurately cutting and sewing the fabric pieces to make a community banner or joining components to produce an electric circuit working safely, responsibly and cooperatively to ensure safe work areas, for example the safe use of equipment when making a water-resistant, floating craft or a model of an environmentally sensitive outdoor shelter using appropriate personal protective equipment required for the use of some tools and equipment, for example protective eyewear manipulating materials with appropriate tools, equipment and techniques, for example when preparing food, cultivating garden beds, constructing products 	ACTDEP026	<p>Students use appropriate tools, equipment and joining techniques safely to construct their PowerAnchor vehicles from the selected materials either individually or in a group.</p> <p>Students complete appropriate safety tests and undergo required safety training prior to making their vehicles. Corrected personal protective equipment (PPE) is used when required.</p>	✓	✓	✓	✓	✓
<p>Negotiate criteria for success that include sustainability to evaluate design ideas, processes and solutions</p> <ul style="list-style-type: none"> independently and collaboratively identifying criteria for success, processes and planning, for example using visual representations such as a flowchart evaluating the suitability of materials, tools and equipment for specific purposes reflecting on how well their designed solutions ensure safety and wellbeing of users and consumers and meet the needs of communities and different cultures considering the criteria for success in relation to the benefits and costs of production processes, the 	ACTDEP027	<p>As a class group, students work with their teacher to determine the criteria to be used to determine the overall success of their PowerAnchor vehicle as a solution to the design challenge.</p> <p>A vehicle production plan flowchart can be used to illustrate the procedure required to construct vehicles.</p>	✓	✓	✓	✓	✓

<p>environmental impact, future use and application, and social values and ethics of clients</p> <ul style="list-style-type: none"> evaluating products, services and environments from a range of technologies contexts with consideration of ethics and sustainability 		<p>The criteria should be referred back to whenever evaluating part of the project, and make reference to the function, aesthetics, safety and sustainability of the project.</p>					
<p>Develop project plans that include consideration of resources when making designed solutions individually and collaboratively</p> <ul style="list-style-type: none"> examining the essential features of existing processes to inform project planning including safe work practices that minimise risk setting milestones for production processes and allocating roles to team members identifying when materials, tools and equipment are required for making the solution outlining the planning and production steps needed to produce a product, service or environment using digital technologies reflecting on planned steps to see if improvements can be made 	ACTDEP028	<p>As a class group, students work with their teacher to develop a vehicle production plan, identifying key milestones, materials and equipment required and any associated risks and control measures.</p> <p>Students provide a reflective evaluation for each step to determine where improvements can be made to the function, aesthetics and safe operation of their PowerAnchor vehicle.</p>	✓	✓	✓	✓	✓