

**STEM/DESIGN AND TECHNOLOGIES**

STEM is an acronym for Science, Technology, Engineering and Mathematics. STEM learning emphasises students gaining knowledge and developing skills needed for the twenty-first-century workforce. The STEM design technology activities the students will be engaged in are meaningfully integrated and designed to cultivate student interest and support the Australian Curriculum achievement standards. STEM design technology activities emphasis a way of teaching and learning that focuses on hands-on inquiry and open-ended exploration. It allows students with diverse interests, abilities and experiences to develop skills. STEM design technology encourages students to take the lead in their own learning with guidance from others, including peers, teachers and teacher aides.

Students will apply scientific inquiry, content knowledge and technological design to solve real world problems. The key components of STEM design technology activities are creativity, teamwork, communication, critical thinking and reflection. Students will build their skills in research to find out what is already known about a topic. Collaborate with other students to complete design activities. Communicate openly, support each other and respect the contributions of others. Students will use creativity and imagination to design objects, processes, models or systems. They will test the design, record data, and analyse and interpret results.  Students will think back on the process in a way that further promotes higher-order thinking.

Through STEM design technology students may gain knowledge, understanding and skills in the following areas.

Science- Basic science processing skills including: - classifying, observing, measuring, inferring, communicating, predicting, manipulating materials, replicating, using numbers, developing vocabulary, questioning, and using cues. They will integrate science skills into creating models. Formulating a hypothesis, generalising, identifying and controlling variables, defining operationally, recording and interpreting data, making decisions and experimenting.

Technology- Design process includes: - identifying and collecting information about everyday problems that can be solved by technology. It also includes generating ideas and requirements for solving problems.

Engineering- Design process includes identifying a problem or design opportunity; proposing designs and possible solutions; implementing the solution; evaluating the solution and its consequences; and communicating the problem, process and solution.

Mathematics- Skills include;- the ability to use problem-solving skills, formulate problems, develop and apply a variety of strategies to solve problems, verify and interpret results, and generalisation solutions and strategies to new problems. Students will also need to be able to communicate with models, orally, in writing and with pictures and graphs; reflect and clarify their own thinking; use the skills of reading, listening and observing to interpret and evaluate ideas; and be able to make conjectures and convincing arguments.

STEM Design technology activities by year level.

**YEAR SIX**

Year 6 students will be looking at magnetism to create and innovative game using the forces of magnets. They will create a design plan and implement this plan to create a designed solution. They will test, evaluate and reflect on the product and the process. They will be assessed on their ability to follow a sequence of steps to build a designed solution, work collaborative and co-operatively in a group situation.

**YEAR FIVE**

Year 5 students will be looking at combining origami with card making. They will create a decorative designed pop up card using the skills of origami and card making. They will create a design plan and implement this plan to create a designed solution. They will test, evaluate and reflect on the product and the process. They will be assessed on their ability to follow a sequence of steps to build a designed solution, work collaborative and co-operatively in a group situation.

**YEAR THREE**

Year 3 students will be looking at sustainability and repurposing items. They will create a useful item from recycled or upcycled materials. They will create a design plan and implement this plan to create a designed solution. They will test, evaluate and reflect on the product and the process. They will be assessed on their ability to follow a sequence of steps to build a designed solution, work collaborative and co-operatively in a group situation.

**YEAR FOUR**

Year 4 students will be looking at sustainability and the needs of wild birds. They will create a birdfeeder for a specific type of local bird, the item is to be made from recycled or upcycled materials. They will create a design plan and implement this plan to create a designed solution. They will test, evaluate and reflect on the product and the process. They will be assessed on their ability to follow a sequence of steps to build a designed solution, work collaborative and co-operatively in a group situation.

**YEAR TWO**

Year 2 students will be looking at forces and how forces, push, pull and roll, are used to make an object move. They will then create a design plan for to create an object that requires push, pull or roll forces to move. They will be assessed on their ability to follow a sequence of steps to build a designed solution using the forces of push, pull or roll.

**SEMESTER OVERVIEW**

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**Together we build the future**

**YEAR ONE**

Year 1 students will be looking at forces and how forces, push, pull and roll, are used to make an object move. They will then with some guidance create a design plan for a designed an object that requires push, pull or roll forces to move. They will be assessed on their ability to follow a sequence of steps to build a designed solution using the forces of push, pull or roll.

**PREP**

Prep students will be looking at forces and how forces, push, pull and roll, are used to make an object move. They will then be guided through the design process to design an object that requires push, pull or roll forces to move. They will be assessed on their ability to follow a sequence of steps to build a designed solution using the forces of push, pull or roll.