Responding to the Digital Technology Curriculum

Digital Technologies and the national curriculum – what's it all about?

Learning about and with digital technologies will contribute to developing an informed digital society.

Digital Technologies is learning about technology. It involves learning to be a creator in the digital world, not just learning to use systems. That is the objective of the digital technologies curriculum.

The new digital curriculum covers two key areas, **computational thinking** and **designing and developing digital outcomes.**

Computational thinking is about understanding the computer science principles that underlie all digital technologies, and learning how to develop instructions, such as programming, to control these technologies."

"Designing and developing digital outcomes is about understanding that digital systems and applications are created for humans by humans, and developing knowledge and skills in using different digital technologies to create digital content across a range of digital media.

Connecting to industry

It is one of Howick's aspirations to be able to make authentic links with industry to demonstrate STEM in the real world.

Important for students to not only connect with industry but ultimately see and be exposed to career pathways involving the disciplines of STEM.

DigiSTEM at Howick Intermediate School

- Using the disciplines of STEM from an authentic inquiry
- Using STEM within an authentic mechatronics programme
- Students being digital creators
- Developing computational thinking skills

STEM
Science · Technology · Engineering · Math

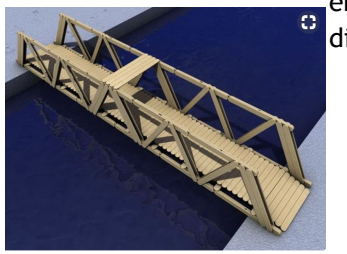
The DigiSTEM Approach

The DigiSTEM approach is to encapsulate all the disciplines of STEM. This is, science, technology, engineering, maths. We offer a mechatronics programme which is a combination of engineering and technology.

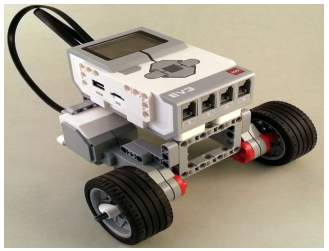
The engineering component provides students with the opportunity to plan and design a product using the engineering design process. The product the students design is from an authentic inquiry scenario.

The technology component is to code and programme a robot which has a direct link with the authentic engineering inquiry.

This mechatronics programme is a very collaborative approach and gives students the opportunity to think and feel like engineers and digital creators.



Students design a truss bridge which can sustain a robot to be deployed over.



DigiSTEM Extension

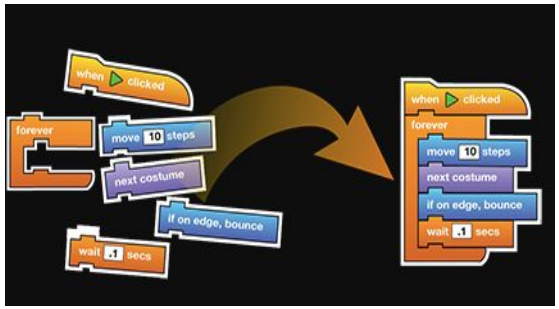
An introduction to programming for beginners in intermediate age groups. Introducing the class to programming using a fun scenario-based approach where students build two games using the dispositions of computational thinking and a variety of coding skills.

Topics Covered: Using sequencing, pattern recognition, loops, and conditional logic to create programmes. Create scenes, add sounds and music, and use keyboard controls to drive programmes. Students learn about motion, broadcasting messages, and adding special effects.

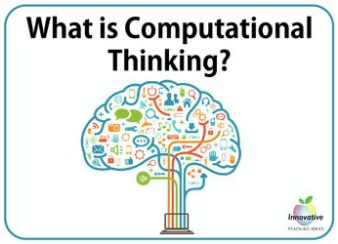
The programme we use for this is Tynker.

TYNKER™
CODING FOR KIDS

The online lessons deliver a comprehensive range of interactive lessons, video tutorials and quizzes which make coding enjoyable and engaging.
Tynker uses visual blocks which click into place - much like a digital puzzle. This is computational thinking.



Computational Thinking



Computational Thinking is a problem solving process that includes a number of characteristics and dispositions.

The components of computational thinking are:

- **Decomposition:** Breaking down data, processes, or problems into smaller, manageable parts
- **Pattern Recognition:** Observing patterns, trends, and regularities in data
- **Abstraction:** Identifying the general principles that generate these patterns
- **Algorithm Design:** Developing the step by step instructions for solving this and similar problems
