Digital Technologies in focus:

Supporting implementation of Digital Technologies

20 April 2017

acara AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

TECHNOLOGIES OVERVIEW

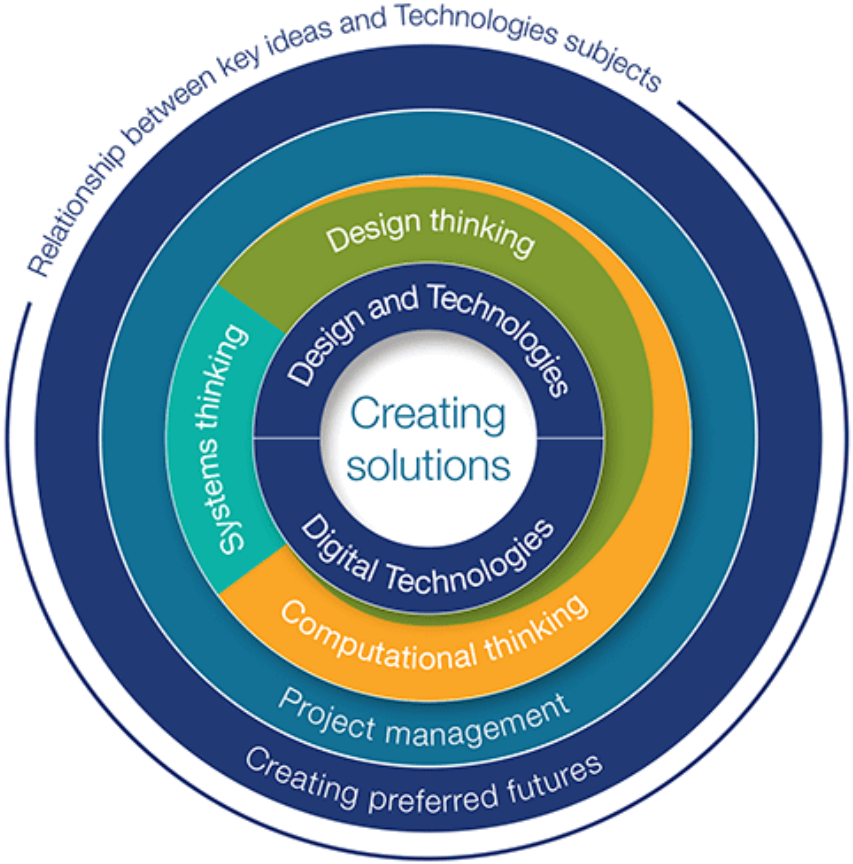
Background

- October 2015: ACARA published the F–10 Australian Curriculum: Digital Technologies
- 7 December 2015: Australian Government released the National Innovation and Science Agenda (NISA)
  - $64.6 million has been committed to STEM education initiatives, with a particular focus on Digital Technologies
- 11 December 2015: National STEM School Education Strategy was endorsed by Education Council
- 30 June 2016: Digital Technologies Hub published (Coding across the Curriculum funding)

Technologies curriculum

Curriculum has been developed:

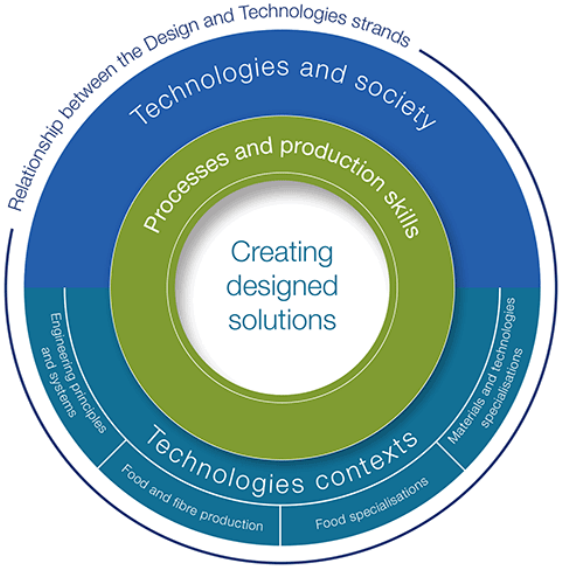
- from Foundation to Year 8 in two subjects: Design and Technologies and Digital Technologies
- from Years 9 to 10 in two optional subjects: Design and Technologies and Digital Technologies



Design and Technologies

Comprises two related strands:

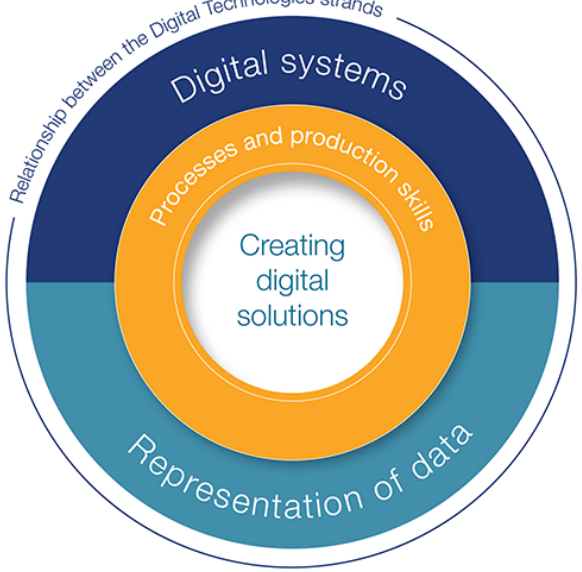
- Design and Technologies knowledge and understanding – the use, development and impact of technologies and design ideas across a range of technologies contexts: engineering principles and systems; food and fibre production; food specialisations; materials and technologies specialisations
- Design and Technologies processes and production skills – the skills needed to design and produce designed solutions.



Digital Technologies structure

Comprises two related strands:

- Digital Technologies knowledge and understanding – the information system components of data, and digital systems (hardware, software and networks)
- Digital Technologies processes and production skills – using digital systems to create ideas and information, and to define, design and implement digital solutions, and evaluate these solutions and existing information systems against specified criteria.



ICT in the Australian Curriculum

ICT is addressed in the Australian Curriculum in two ways:

- ICT capability
- Digital Technologies and Media Arts.

The capability assists students to become effective *users* of ICT.

The Digital Technologies curriculum assists students to become confident ***creators*** of digital solutions.

Key concepts

A number of key concepts underpin the Digital Technologies curriculum:

- **Abstraction**, which underpins all content, particularly the content descriptions relating to the concepts of *data representation* and *specification, algorithms and implementation*
- **Data collection** (properties, sources and collection of data), **data representation** (symbolism and separation) and **data interpretation** (patterns and contexts)
- **Specification** (descriptions and techniques), **algorithms** (following and describing) and **implementation** (translating and programming)
- **Digital systems** (hardware, software and networks and the internet)
- **Interactions** (people and digital systems, data and processes) and **impact** (impacts and empowerment).

Work samples

Australian CURRICULUM

Australian Curriculum: Work Samples

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About work samples

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Australian CURRICULUM

Digital Technologies

Home / Digital Technologies - Satisfactory - Years 5 and 6

Portfolio summary

This portfolio of student work shows that the student can expl
and how digital systems are connected to form networks (W
representing a variety of data types (WS4).

The student can define problems in terms of data and fun
problems (WS1, WS2). The student can incorporate decisio
digital solutions (WS1, WS2), including a visual program (WS
sustainability (WS1). Students manage the creation and comm
and agreed protocols (WS1, WS2).

Work sample 1
Digital project: Learning tool

Work sample 4
Worksheet: Whole numbers

Curriculum version: 8.1

Home / Digital Technologies - Satisfactory - Years 5 and 6 / Digital project: Scratch game

Work sample 2
Digital project: Scratch game

Work sample summary

Students designed a game for a buddy using Scratch visual programming language. They selected a challenge from three options and defined the problem. They designed and implemented the digital solution and recorded their development process.

Years 5 and 6 subject achievement standard *View learning area achievement standard*

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They explain how digital systems use whole numbers as a basis for representing a variety of data types.

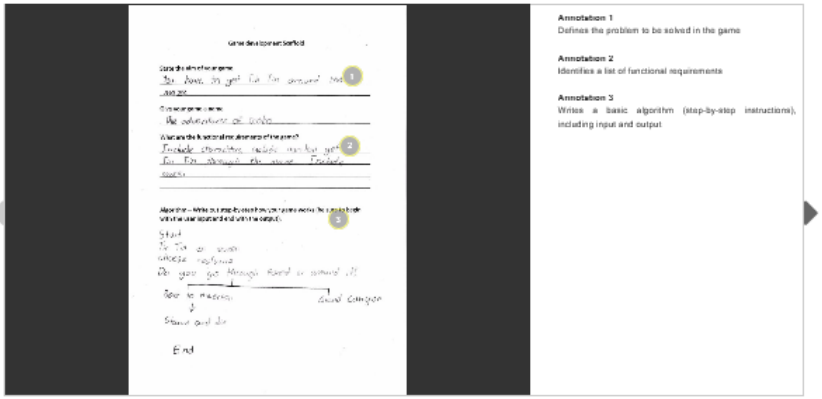
Students define problems in terms of data and functional requirements and design solutions by developing algorithms to address the problems. They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program. They explain how information systems and their solutions meet needs and consider sustainability. Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols.

hide full description

Game development | Scratch game

Zoom

Annotations



Annotation 1
Defines the problem to be solved in the game

Annotation 2
Identifies a list of functional requirements

Annotation 3
Writes a basic algorithm (step-by-step instructions), including input and output

Similar Work Samples:

Below satisfactory
Digital project: Scratch game

Compare | View

Above satisfactory
Digital project: Scratch game

Compare | View

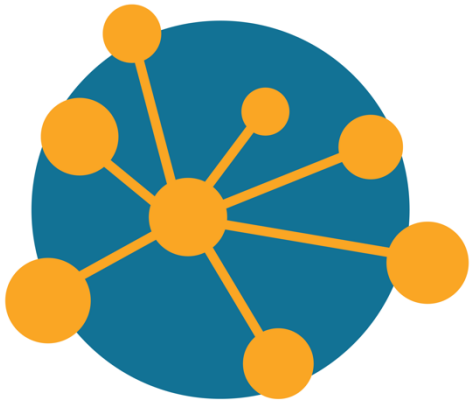
This portfolio

Work Sample 1
Digital project: Learning tool

Work Sample 3
Presentation: School system

Work Sample 4
Worksheet: Whole numbers

Curriculum version: 8.1



Digital Technologies in focus

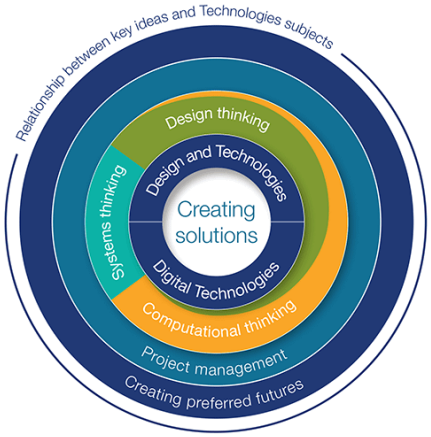
PROJECT OVERVIEW

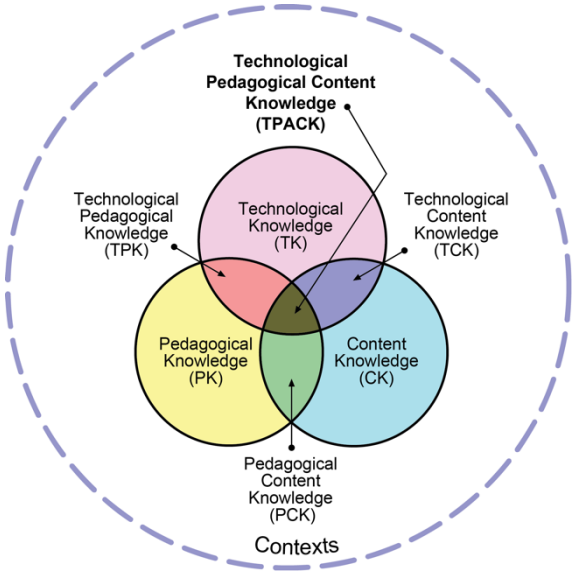
Objectives

- Support school leaders to facilitate implementation of the Australian Curriculum: Digital Technologies, in specific schools in disadvantaged areas
- Facilitate professional learning workshops nationally
- Provide in-school, face-to-face and online support to enhance implementation of the Australian Curriculum: Digital Technologies
- Publish materials developed for use in workshops to provide on-going support for other teachers and schools

Project framework

- Uses the key ideas of the Australian Curriculum: Technologies as a driver for developing technological pedagogical content knowledge (TPACK) and Digital Technologies PCK and as a framework for change.

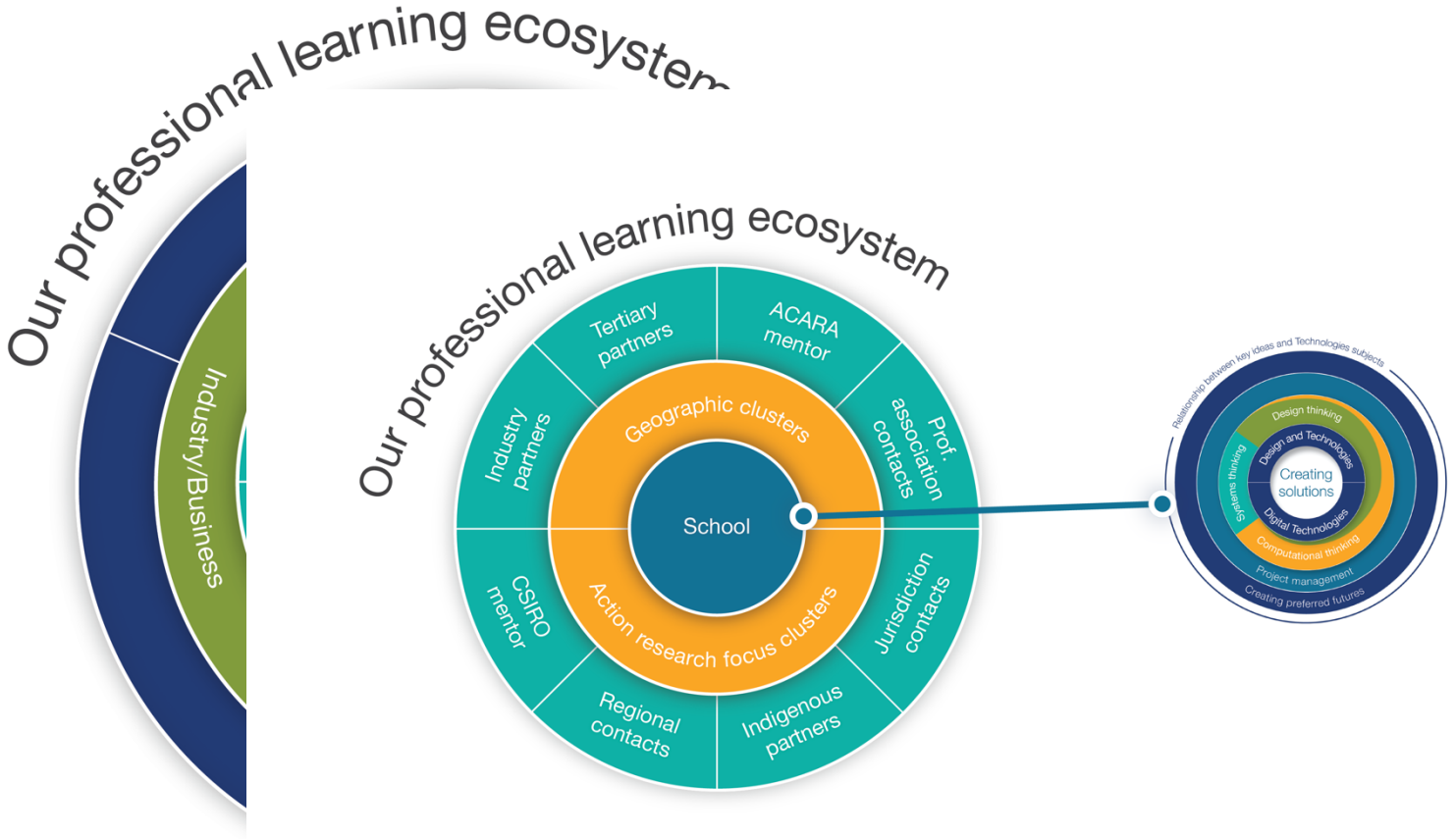




http://www.matt-koehler.com/tpack/tpack-explained/

Teachers as designers

- Managing change through a design process
  - Defining the challenge for your school
  - Identifying criteria for success
  - Generating ideas
  - Designing the action
  - Collaborating with others
  - Planning the activities, timeline and deliverables
  - Implementing
  - Evaluating effectiveness of strategies



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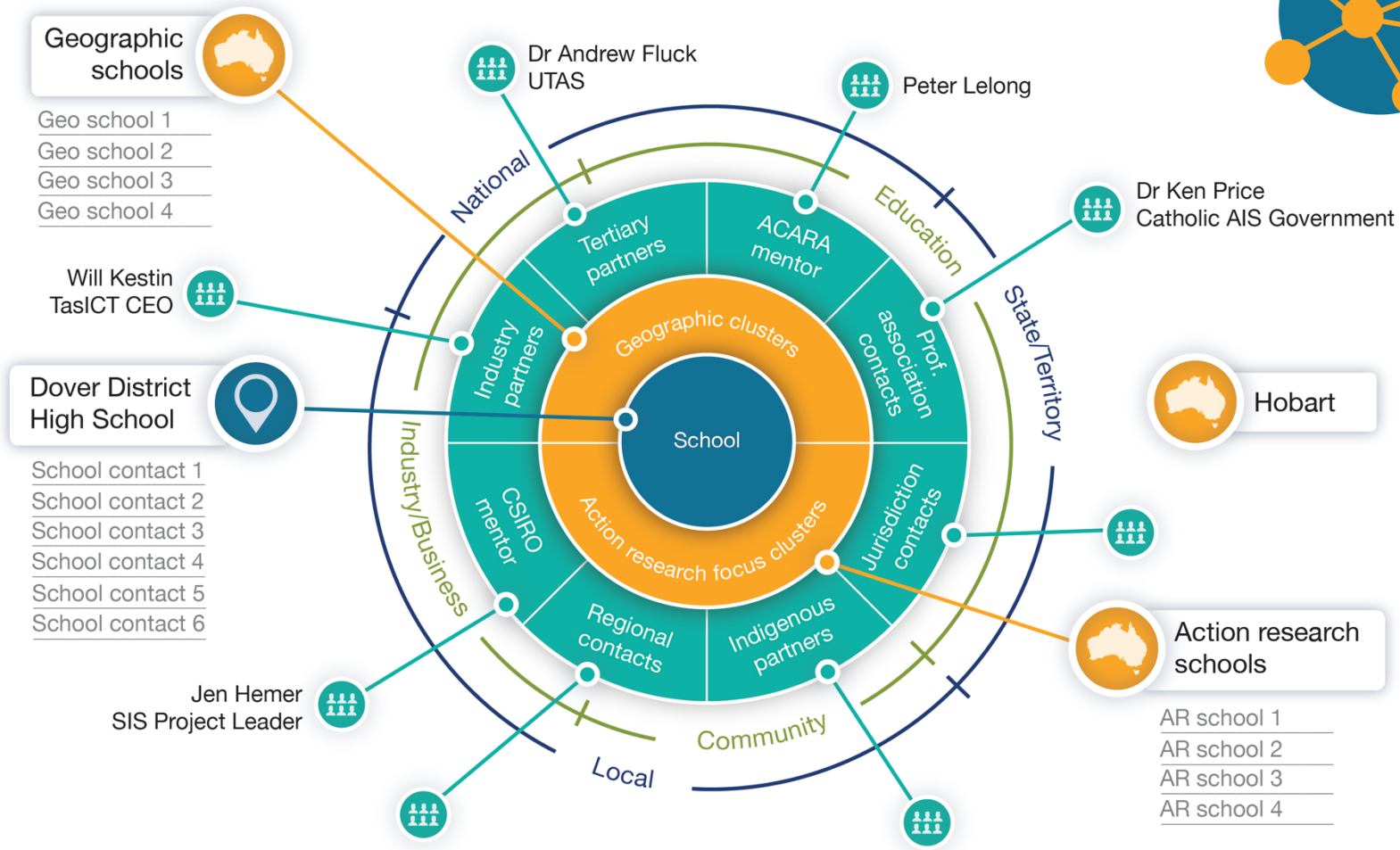
Our professional learning ecosystem



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Peer mentors

Riley Bell, 9, from OLHOC with Gordonvale State High School student Matthew Sues, 16 are teaching a group of Isabella SS kids coding/STEM skills. Picture: Marc McCormack

http://www.couriermail.com.au/news/national/science-technology-engineering-and-mathematics-stem-unity-project-gets-kids-on-track-for-jobs/news-story/a4b8c38f7bff30e1549c6915d390db05?csp=acf16d8333bd07144fa72ca2dc43712d

Clusters

ACT/NSW: Western Sydney; Tamworth; North Coast; Wagga Wagga; Dubbo
NT: Central; Darwin; Arnhem
QLD: Toowoomba; Rockhampton; Cairns
SA: Port Lincoln; Central; Adelaide
Tas: Hobart; West Coast
Vic: Melbourne; Bendigo
WA: Perth; Geraldton; Kalgoorlie

Contacts

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