



## BE A STEM LEADER

### Invest in Digital Technologies Years 4-5-6



Bands 5-6-7 schools across Queensland can deliver the Australian Curriculum: Technologies to Years 4-5-6 students in 2020 through a collaboration with the Department of Education's [IMPACT Centre](#).

### We deliver curriculum and assess and report on student learning

Our highly skilled team provide a full service to your school. They teach, assess and report on the Technologies Learning Area as prescribed by the Australian Curriculum, QCAA and Department of Education.

### Register for one or both subjects

- **Digital Technologies** is available in Semester 2, 2020 – as outlined in this document. Your students create digital solutions that involve data transferral, patterns, iteration and abstraction.
  - Year 4 students use block-based visual programming.
  - Year 5 students use block-based visual programming and the higher level Python programming language.
  - Year 6 students use HTML, CSS and JavaScript.
- **Design and Technologies** is also available in Semester 2, 2020 – [view outline](#).

### Expand your expert teaching team



*John, Katie and Andrew are examples of the specialist teachers available to your school*

- Specialist teachers from the IMPACT Centre become part of your expert teaching team.
- Instead of walking through the classroom door, they login to work directly with your students and staff.
- They collaborate with you and your team to coordinate student involvement and share best practice.
- They create meaningful online communities to connect students, educators and industry experts.

## Curriculum summary

### Content Descriptors: Digital Technologies Years 3-4

#### Knowledge and Understanding

- Identify and explore a range of digital systems with peripheral devices for different purposes, and transmit different types of data ([ACTDIK007](#))
- Recognise different types of data and explore how the same data can be represented in different ways ([ACTDIK008](#))

#### Processes and Productions Skills

- Collect, access and present different types of data using simple software to create information and solve problems ([ACTDIP009](#))
- Define simple problems, and describe and follow a sequence of steps and decisions (algorithms) needed to solve them ([ACTDIP010](#))
- Implement simple digital solutions as visual programs with algorithms involving branching (decisions) and user input ([ACTDIP011](#))
- Explain how student solutions and existing information systems meet common personal, school or community needs ([ACTDIP012](#))
- Plan, create and communicate ideas and information independently and with others, applying agreed ethical and social protocols ([ACTDIP013](#))

### Content Descriptors: Digital Technologies Years 5-6

#### Knowledge and Understanding

- Examine the main components of common digital systems and how they may connect together to form networks to transmit data ([ACTDIK014](#))
- Examine how whole numbers are used to represent all data in digital systems ([ACTDIK015](#))

#### Processes and Productions Skills

- Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information
- Define problems in terms of data and functional requirements drawing on previously solved problems ([ACTDIP017](#))
- Design a user interface for a digital system ([ACTDIP018](#))
- Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) ([ACTDIP019](#))
- Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input ([ACTDIP020](#))
- Explain how student solutions and existing information systems are sustainable and meet current and future local community needs ([ACTDIP021](#))
- Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols ([ACTDIP022](#))

## Assessment and reporting

Students are assessed against the achievement standards from the Australian Curriculum.

- Students demonstrate learning through a variety of activities.
- Student work is marked on an A-E scale.
- Timely verbal and written feedback is given to students with regular updates sent to schools.

Schools receive:

- an interim check-in report describing student achievement and effort during the semester.
- attendance data for the semester and access to digital examples of student work.
- end of semester report including:
  - A-E grade for achievement and effort.
  - written report card comment reflecting student achievement and effort.

**NB:** Report card details will be emailed to your school. Your staff will need to copy and paste this information into OneSchool (we will not have access to OneSchool at your site). You can edit the report details if required.

## Subject Lesson Content: Semester 1, 2020

Wk	Year 4	Year 5	Year 6
1	<b>Introduction to Technologies: Blockly Code</b> <ul style="list-style-type: none"> <li>Digital systems</li> <li>Introduction to block code</li> </ul>	<b>Introduction to Technologies: Blockly Code</b> <ul style="list-style-type: none"> <li>Overview of programming</li> <li>Think like a computer - Algorithms</li> </ul>	<b>Introduction to Technologies Code: HTML 5</b> <ul style="list-style-type: none"> <li>Network and systems thinking</li> <li>Introduction to HTML code</li> </ul>
2	<b>Code: Blockly Code</b> <ul style="list-style-type: none"> <li>Movement and speed blocks</li> <li>Working with colour</li> </ul>	<b>Code: Blockly Code</b> <ul style="list-style-type: none"> <li>Graphics and pixels</li> <li>Introduction to Block Code</li> </ul>	<b>Code: HTML 5</b> <ul style="list-style-type: none"> <li>Computer Science Graphing (CS)</li> <li>HTML coding fundamentals</li> </ul>
3	<b>Code: Blockly Code</b> <ul style="list-style-type: none"> <li>Loops in block code</li> <li>Duplicating block code</li> </ul>	<b>Code: Blockly Code</b> <ul style="list-style-type: none"> <li>Programming in Blockly</li> <li>Problem solving with Blockly</li> </ul>	<b>Code: HTML 5</b> <ul style="list-style-type: none"> <li>Typoglycemia and entropy</li> <li>Problem-solving with HTML code</li> </ul>
4	<b>Check in</b> <ul style="list-style-type: none"> <li>Block code problem solving</li> <li>Elearn Quiz and evaluate</li> </ul>	<b>Check in</b> <ul style="list-style-type: none"> <li>Block code problem solving</li> <li>Elearn Quiz and evaluate</li> </ul>	<b>Check in</b> <ul style="list-style-type: none"> <li>HTML code problem solving</li> <li>Elearn Quiz and evaluate</li> </ul>
5	<b>Code: Blockly Advanced</b> <ul style="list-style-type: none"> <li>Movement and colour</li> <li>Repeat loops</li> </ul>	<b>Code: Python</b> <ul style="list-style-type: none"> <li>Programming syntax</li> <li>Bytes and binary code</li> </ul>	<b>Code: CSS 3</b> <ul style="list-style-type: none"> <li>Human Interface Design (HID)</li> <li>Introduction to CSS</li> </ul>
6	<b>Code: Blockly Advanced</b> <ul style="list-style-type: none"> <li>Algorithms</li> <li>Geometry</li> </ul>	<b>Code: Python</b> <ul style="list-style-type: none"> <li>Using variables in Python</li> <li>Decision making using else/if</li> </ul>	<b>Code: CSS 3</b> <ul style="list-style-type: none"> <li>Encryption (Cipher)</li> <li>CSS coding fundamentals</li> </ul>
7	<b>Code: Blockly Advanced</b> <ul style="list-style-type: none"> <li>Conditional statements</li> <li>Nested repeat loops</li> </ul>	<b>Code: Python</b> <ul style="list-style-type: none"> <li>Else/if statements</li> <li>Programming logic</li> </ul>	<b>Code: CSS 3</b> <ul style="list-style-type: none"> <li>Controlling colour with CSS</li> <li>CSS properties and values</li> </ul>
8	<b>Code: Blockly Advanced</b> <ul style="list-style-type: none"> <li>Coordinates</li> <li>Mathematical equations</li> </ul>	<b>Code: Python</b> <ul style="list-style-type: none"> <li>Python in the real world</li> <li>Mathematical calculations</li> </ul>	<b>Code: CSS 3</b> <ul style="list-style-type: none"> <li>Margins, padding and borders</li> <li>Problem-solving with CSS code</li> </ul>
9	<b>Check in</b> <ul style="list-style-type: none"> <li>Scratch code problem solving</li> </ul>	<b>Check in</b> <ul style="list-style-type: none"> <li>Python code problem solving</li> <li>Elearn quiz and evaluate</li> </ul>	<b>Check in</b> <ul style="list-style-type: none"> <li>HTML/CSS code problem solving</li> <li>Elearn quiz and evaluate</li> </ul>
10	<b>Code: Scratch</b> <ul style="list-style-type: none"> <li>Overview of Scratch code</li> <li>Exploring Scratch</li> </ul>	<b>Code: Python Advanced</b> <ul style="list-style-type: none"> <li>Python syntax – strings</li> <li>String challenge tasks</li> </ul>	<b>Code: Javascript</b> <ul style="list-style-type: none"> <li>JS and the web</li> <li>Introduction to Javascript</li> </ul>
11	<b>Code: Scratch</b> <ul style="list-style-type: none"> <li>Scratch fundamentals</li> <li>Scratch account creation</li> </ul>	<b>Code: Python Advanced</b> <ul style="list-style-type: none"> <li>Python syntax – logic, lists and loops</li> <li>Logic, lists and loops challenges</li> </ul>	<b>Code: Javascript</b> <ul style="list-style-type: none"> <li>JS syntax – variables and data</li> <li>JS syntax – logic and conditionals</li> </ul>
12	<b>Code: Scratch</b> <ul style="list-style-type: none"> <li>Step-by-step Scratch instruction</li> <li>Scratch studios</li> </ul>	<b>Code: Python Advanced</b> <ul style="list-style-type: none"> <li>Text parser game styles – a history</li> <li>Text parser Python game build</li> </ul>	<b>Code: Javascript</b> <ul style="list-style-type: none"> <li>JS syntax – looping and functions</li> <li>JS syntax – objects and arrays</li> </ul>
13	<b>Code: Scratch</b> <ul style="list-style-type: none"> <li>Programming in Scratch</li> <li>Scratch media library</li> </ul>	<b>Code: Python Advanced</b> <ul style="list-style-type: none"> <li>Final Python text game build</li> <li>Collaboration and sharing</li> </ul>	<b>Code: Javascript</b> <ul style="list-style-type: none"> <li>Javascript – the DOM</li> <li>Javascript – JQuery, JSON and AJAX</li> </ul>
14	<b>Check in</b> <ul style="list-style-type: none"> <li>Scratch code problem solving</li> <li>Elearn quiz and evaluate</li> </ul>	<b>Check in</b> <ul style="list-style-type: none"> <li>Python code problem solving</li> <li>Elearn quiz and evaluate</li> </ul>	<b>Check in</b> <ul style="list-style-type: none"> <li>JS code problem solving</li> <li>Elearn quiz and evaluate</li> </ul>
15	<b>Analyse existing digital games</b> <ul style="list-style-type: none"> <li>Makey Makey Introduction</li> <li>Control and input examination</li> </ul>	<b>Analyse existing digital games</b> <ul style="list-style-type: none"> <li>Programming in electronics</li> <li>Introduction to the <b>micro:bit</b> kit</li> <li>Python <b>micro:bit</b> editor</li> </ul>	<b>Analyse existing digital games</b> <ul style="list-style-type: none"> <li>Programming in electronics</li> <li>Introduction to the <b>micro:bit</b> kit</li> <li>Javascript <b>micro:bit</b> editor</li> </ul>
16	<b>Design a digital solution</b> <ul style="list-style-type: none"> <li>Conductivity and electronics</li> <li>Alternative input design</li> </ul>	<b>Design a digital solution</b> <ul style="list-style-type: none"> <li>Programming the <b>micro:bit</b></li> <li><b>micro:bit</b> hardware features</li> </ul>	<b>Design a digital solution</b> <ul style="list-style-type: none"> <li>Programming the <b>micro:bit</b></li> <li><b>micro:bit</b> hardware features</li> </ul>
17	<b>Visual programming solution</b> <ul style="list-style-type: none"> <li>Matching inputs to control schemes</li> <li>Game controller prototype</li> <li>Final Makey Makey controller build</li> </ul>	<b>Visual programming solution</b> <ul style="list-style-type: none"> <li><b>micro:bit</b> bluetooth communication</li> <li><b>micro:bit</b> multiplayer games</li> <li>Final <b>micro:bit</b> program task</li> </ul>	<b>Visual programming solution</b> <ul style="list-style-type: none"> <li><b>micro:bit</b> bluetooth communication</li> <li><b>micro:bit</b> multiplayer games</li> <li>Final <b>micro:bit</b> program task</li> </ul>
18	<b>Evaluate your game, Futures/Check in</b> <ul style="list-style-type: none"> <li>Collaboration and sharing</li> <li>Futures thinking</li> <li>The real world of code</li> </ul>	<b>Evaluate your game, Futures/Check in</b> <ul style="list-style-type: none"> <li>Collaboration and sharing</li> <li>Futures thinking</li> <li>The real world of code</li> </ul>	<b>Evaluate your game, Futures/Check in</b> <ul style="list-style-type: none"> <li>Collaboration and sharing</li> <li>Futures thinking</li> <li>The real world of code</li> </ul>

## Format

### Year 4 – Semester 2, 2020

- 1 x 60 minute web conference lesson each week delivered to a group of 15-20 students.
- 18 x web conference lessons per semester (9 per term).
- Optional independent online activities are available each week - completed at a time that suits the school schedule.
- We ensure that students complete 20 hours of Digital Technologies activities, which is half of the 40 hours [recommended time allocation](#) per year for Year 4 Technologies (the other half is [Design and Technologies](#)).

### Year 5 – Semester 2, 2020

- 1 x 60 minute web conference lesson each week delivered to a group of 15-20 students.
- 18 lessons per semester, 9 lessons per term.
- 1 x 30 minute set of independent online activities each week - available in an eLearn online classroom, completed at a time that suits the school schedule – teacher/teacher-aide support recommended.
- We ensure that students complete 30 hours of Digital Technologies activities, which is half of the 60 hours [recommended time allocation](#) per year for Year 5 Technologies (the other half is [Design and Technologies](#)).

### Year 6 – Semester 2, 2020

- 1 x 60 minute web conference lesson each week delivered to a group of 15-20 students.
- 18 lessons per semester, 9 lessons per term.
- 1 x 20-30 minute set of independent online activities each week - available in an eLearn online classroom, completed at a time that suits the school schedule – teacher/teacher-aide support recommended.
- We ensure that students complete 30 hours of Digital Technologies activities, which is half of the 60 hours [recommended time allocation](#) per year for Year 6 Technologies (the other half is [Design and Technologies](#)).

## Grouping models and bandwidth

**Model 1:** Your years 4-5-6 students login at the same time each week, and work separately with the appropriate group e.g. every Monday 12:00pm your Year 4 students work with John, Year 5 students with Katie, Year 6 students with Andrew,

**Model 2:** Your years 4-5-6 students login at different times across the week e.g. Year 4s on a Monday, Year 5s on a Tuesday, Year 6s on a Friday – depending on availability of timeslots.

Your online group of 15-20 students may consist of students from your school only, or from multiple small schools.

Your school's [bandwidth](#) determines how many students from your school can login and successfully participate at one time. Contact us to organise a 20-30 minute test session which will help you decide if Model 1 or 2 is most suitable.

## Timetabling

We will publish timeslots for you to book into. The following timeslots are [examples only](#) – you can involve Years 4-5-6 in one of these sessions or spread student involvement across the week:

*Monday 12:00pm – 1:00pm*

*Tuesday 1:30pm – 2:30pm*

*Friday 12:00pm – 1:00pm*

## Equipment and Supervision

To successfully participate, each student requires:

- their own PC or Mac computer (desktop or laptop – PC or Mac – but not an iPad)
- reliable internet access (blue cord connection is preferable to wireless);
- a noise cancelling headset with microphone (approx. \$30-\$50 each);
- a suitable learning venue e.g. classroom computer, library area, or school computer lab/pod;
- supervisory support from a principal, teacher, teacher-aide or volunteer parent, e.g. help students to login and get started on time, regularly communicate with our online teacher.

## Why is there a cost?

- There is a cost for all school staffing.
  - Your HR structure and staffing allocations are based on the number of enrolments at your school.
  - In addition, most schools invest in specialist staff as part of their improvement agenda – using FTE or cash budgets to fund targeted leadership, coaching, teacher and teacher-aide roles.
  - In a similar way, your school can invest in specialist staff from the IMPACT Centre.
  - Our highly skilled teachers can join your expert teaching team.



*John, Katie and Andrew are examples of the specialist teachers available to your school*

## Cost-recovery model

- The IMPACT Centre operates on a cost-recovery model, with salaries and operational costs fully-funded by investing schools.
- As background, Department of Education leaders asked us to create a school-funded model so that each school can match its improvement agenda to our initiatives and invest accordingly.

## Option 1: Invest FTE

- To invest FTE, simply transfer a small fraction of FTE to the IMPACT Centre via School Budgeting Solution (SBS).
- Estimate your student numbers for now, then we will confirm the exact FTE fraction with you in February, 2020. You will be charged for *actual numbers*.
- Call us on 3634 1888 and we will work out your estimated FTE fraction together.

## Option 2: Invest cash

- To invest cash, simply budget for the amount and we invoice your school during the program.
- Estimate your student numbers for now, then we will send your school an invoice once actual numbers can be confirmed in February, 2020. You will be charged for *actual numbers*.
- Many schools use funds from [Investing for Success \(I4S\)](#), [Advancing STEM in primary schools](#), internal budget allocations or [RREAP](#) funding.
- Some schools offer parents or community organisations the opportunity to partially or fully contribute.
- The costs are:
  - \$495 per student per subject (either Digital or Design and Technologies)
  - \$990 per student for both subjects in Semester 2 (Digital and Design and Technologies)

## Additional costs

- Each participating student must use a headset with microphone (\$30-\$50 per headset).

**NB:** We supply each student with an electronics kit, posted to your school. This is included in the prices on the next page – no extra charge.



## Participation costs

No. of Students	Semester 2 Digital Technologies	Semester 2 Design and Technologies	Semester 2 Both subjects
1 student	\$495 or 0.01 FTE for Sem 1 or 2	\$495 or 0.01 FTE for Semester 2	\$990 or 0.02 FTE for Semester 2
2 students	\$990 or 0.02 FTE for Semester 2	\$990 or 0.02 FTE for Semester 2	\$1980 or 0.04 FTE for Semester 2
3 students	\$1485 or 0.03 FTE for Semester 2	\$1485 or 0.03 FTE for Semester 2	\$2970 or 0.06 FTE for Semester 2
4 students	\$1980 or 0.04 FTE for Semester 2	\$1980 or 0.04 FTE for Semester 2	\$3960 or 0.08 FTE for Semester 2
5 students	\$2475 or 0.05 FTE for Semester 2	\$2475 or 0.05 FTE for Semester 2	\$4950 or 0.10 FTE for Semester 2
6 students	\$2970 or 0.06 FTE for Semester 2	\$2970 or 0.06 FTE for Semester 2	\$5940 or 0.12 FTE for Semester 2
7 students	\$3465 or 0.07 FTE for Semester 2	\$3465 or 0.07 FTE for Semester 2	\$6930 or 0.14 FTE for Semester 2
8 students	\$3960 or 0.08 FTE for Semester 2	\$3960 or 0.08 FTE for Semester 2	\$7920 or 0.16 FTE for Semester 2
9 students	\$4455 or 0.09 FTE for Semester 2	\$4455 or 0.09 FTE for Semester 2	\$8910 or 0.18 FTE for Semester 2
10 students	\$4950 or 0.10 FTE for Semester 2	\$4950 or 0.10 FTE for Semester 2	\$9900 or 0.20 FTE for Semester 2
11 students	\$5445 or 0.11 FTE for Semester 2	\$5445 or 0.11 FTE for Semester 2	\$10890 or 0.22 FTE for Semester 2
12 students	\$5940 or 0.12 FTE for Semester 2	\$5940 or 0.12 FTE for Semester 2	\$11880 or 0.24 FTE for Semester 2
13 students	\$6435 or 0.13 FTE for Semester 2	\$6435 or 0.13 FTE for Semester 2	\$12870 or 0.26 FTE for Semester 2
14 students	\$6930 or 0.14 FTE for Semester 2	\$6930 or 0.14 FTE for Semester 2	\$13860 or 0.28 FTE for Semester 2
15 students	\$7425 or 0.15 FTE for Semester 2	\$7425 or 0.15 FTE for Semester 2	\$14850 or 0.30 FTE for Semester 2
16 students	\$7920 or 0.16 FTE for Semester 2	\$7920 or 0.16 FTE for Semester 2	\$15840 or 0.32 FTE for Semester 2
17 students	\$8415 or 0.17 FTE for Semester 2	\$8415 or 0.17 FTE for Semester 2	\$16830 or 0.34 FTE for Semester 2
18 students	\$8910 or 0.18 FTE for Semester 2	\$8910 or 0.18 FTE for Semester 2	\$17820 or 0.36 FTE for Semester 2
19 students	\$9405 or 0.19 FTE for Semester 2	\$9405 or 0.19 FTE for Semester 2	\$18810 or 0.38 FTE for Semester 2
20 students	\$9900 or 0.2 FTE for Semester 2	\$9900 or 0.2 FTE for Semester 2	\$19 800 or 0.4 FTE for Semester 2

**NB:** Contact us to work out the amount for your school – phone **3634 1888** or email [admin@impact.edu.au](mailto:admin@impact.edu.au).