Digital Technology Progression Points: Year 4 – v8.3

Independent Schools Queensland (ISQ) has developed Progression Points to support teachers in independent schools with implementation of version 8.3 of the Australian Curriculum.

A Word document version of the Progression Points is available so that teachers can rearrange the sequences of learning.

Personnel in independent schools are encouraged to consider how the Progression Points could be used to: -

* diagnose through formative assessment, the capabilities, strengths and weaknesses of individual students
* plan teaching programs to meet the needs of individuals and groups of students
* formally assess the progress of individuals and groups of students
* report to parents on the achievements of their children against the Australian Curriculum.

The “demonstrating” column accurately reflects the expectations of version 8.3 of the Australian Curriculum achievement standards.

ISQ welcomes any suggestions for improvement from teachers working very closely with the Progression Points.

**Digital Technologies Progression Points – Year 4**

| **Strands and content descriptions for teaching*****Modes*** | **Emerging** | **Developing** | **Demonstrating** | **Advancing**  | **Extending** |
| --- | --- | --- | --- | --- | --- |
| Beginning to work towards the achievement standard  | Working towards the achievement standard | Demonstrating the achievement standard | Working beyond the achievement standard | Extending with depth beyond the achievement standard |
| * *With explicit prompts (step-by-step oral scaffolding, reference to charts, word wall, etc)*
* *In familiar contexts*
* *Learning to follow procedures*
 | * *With prompts (oral or written questions, reference to charts, word walls, etc)*
* *In familiar contexts*
* *Attempts to explain*
 | * *Independent (with access to charts, word walls, etc.)*
* *In familiar contexts*
* *Explains basic understanding*
 | * *Independent (with access to charts, word walls, etc.)*
* *Applying in familiar contexts*
* *Explains with detail*
 | * *Independent (with access to charts, word walls, etc.)*
* *Applying in new contexts*
* *Explains with connections outside the teaching context*
 |
| **Achievement Standard**By the end of Year 4, students [describe](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Describe) how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. They [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) how the same data sets can be represented in different ways.Students define simple problems, [design](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Design) and implement digital solutions using algorithms that involve decision-making and user input. They [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) how the solutions meet their purposes. They collect and [manipulate](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Manipulate) different data when creating information and digital solutions. They safely use and manage information systems for identified needs using agreed protocols and [describe](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Describe) how information systems are used. |
| **Content Descriptions** | Students [describe](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Describe) how a range of digital systems (hardware and software) and their peripheral devices (*device that can be connected to a* *digital system*) can be used for different purposes. |
| **KNOWLEDGE AND UNDERSTANDING** | Identify and explore a range of digital systems with peripheral devices for different purposes, and transmit different types of [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=data) [(ACTDIK007)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIK007) | **With explicit prompts, students can:*** **list** the different digital systems and peripheral devices used in their exploration to reach their end purposes.

**In familiar contexts, students can:*** follow detailed instructions, to explore a range of digital systems and peripheral devices from their everyday lives to identify:
* **Input** functions:

Keyboard, stylus, touch screen, switch scan device or joystick to input instructions.* **Output** functions:

Use a monitor, printer or tablet to display information.* **Storage** functions:

UBB flash drive and external hard drive * Students follow teachers detailed instructions to capture images for teacher specified purpose.

*EG. Students explore the function of remotes and joysticks. They discuss how a keyboard interacts with the monitor or how a remote can input instructions to the T.V. and how this results in the output from the T.V. They list the systems and devices they have used.* | **With prompts, students:** * **identify** how different types of digital system components and peripheral devices interact to perform: **Input** functions, **Output** functions and **Storage** functions

**In familiar contexts:*** **explore** different types of digital system components and peripheral devices to explore how they interact to perform:
* **Input** functions with:

Keyboard, stylus, touch screen, switch scan device, light senor, or joystick to input instructions, * **Output** functions with:

A monitor, printer, projector or tablet to display information* **Storage** functions with:

USB flash drive and external hard drive*EG. Students use specific peripheral devices to capture different types of data such as; recording sound bites from a survey or capturing images of ongoing observations of the results of a science experiment. Students then transfer data from their camera to the computer. They attempt to explain the procedure for performing this sequence.* | I**ndependently, students can:*** **describe** how a range of digital systems and their peripheral devices can be used for different purposes.
* **explain** in basic terms and illustrate how the different digital systems and peripheral devices were used to meet their end purposes.

**In familiar contexts, students can:*** **explore** specific peripheral devices such as a digital microscope or video camera to capture different types of data.

*EG. in relation to a scientific study** **transfer** images and sound from their mobile device (camera, video recorder) to a computer for editing in a software program.
 | **Independently, students can:*** **explain** in detail their understanding of how a range of digital systems and their peripheral devices can be used for different purposes.

*EG. students describe the end results based on their experimentation with how different digital systems and their peripheral devices can be used for a self-determined purpose related to a topic inquiry.***In familiar contexts, students:*** **analyse** how peripheral devices interact with digital systems.
* **test and evaluate** how different digital systems and their peripheral devices can be used for a self-determined purpose related to a topic inquiry.
 | **Independently, and in new contexts, students can:*** **explain** in detail their understanding of how a range of digital systems and their peripheral devices can be used for different purposes.
* **Tests, evaluates and justifies** with how different digital systems and their peripheral devices can be used for a self-determined purpose.

*EG. students describe the different purposes digital systems and their peripheral devices can be used for, based on their experimentation with the same for a self-determined purpose in a new topic area.* |
|  | Students [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) how the same data sets can be represented in different ways. |
| **KNOWLEDGE AND UNDERSTANDING** | Recognise different types of [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=data) and explore how the same [data](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=data) can be represented in different ways [(ACTDIK008)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIK008) | **With explicit prompts, students can:*** **list** the ways that data can be represented in familiar contexts.

**In familiar contexts, students can:*** **explore** how the same data can be represented in different ways.
* start to **recognise** different types of data and label them.

*EG. Students analyse how colour can be used as part of a code to represent data, Eg. in Scratch. They explore the function of symbols in flowcharts Eg. diamond shape to represent a Yes/No function and an alternative way to represent the same thing.* | **With prompts, students can:*** **compare** how the same data sets can be represented in different ways.

*EG. The teacher provides students with the same set of data organised as 2 different types of graphs and lead them to compare their differences using a graphic organiser.***In familiar contexts, students:*** **use a table** to **reorganise** information that includes sentences and/or words, and/or numbers and/or images.

*EG. students organise data from Mathematics in picture or column graphs or phrases from a character study in 2 different types of tables.** **identify and compare** the resulting representations.
 | **Independently, students can:*** **classify** different sets of data based on their representation.
* **compare and explain** how the same set of data can be represented in different ways.

**In familiar contexts, students can:*** **recognise** the representation of different types of data, such as waves for sound.

*EG. They can compare how Aboriginal and Torres Strait Islander art can represent different concepts using the same symbol, (for example three circles, drawn as lines, can represent ants, fruit, flowers or eggs depending on the region the language is from).* | **Independently and in familiar contexts, students can:*** **apply** their understanding of how the same data sets can be represented differently
* **analyse and explain** in detail the positives and negatives of their self-created representation of data.

*EG. Explore codes and symbols that are representations of data, for example Morse code and semaphore. Apply their understanding to independently represent a set of data from a familiar context in the 2 different codes. Do a comparison and analysis of the two through a PMI chart.* | **Independently and in new contexts, students can:*** **explain** in detail how data can be represented in different ways in new contexts.
* **apply** their understanding to represent data for a specific purpose.

*EG. Explore visual coding through programs such as Blocky/Scratch/Mindstorm. Analyse how colour can be used as part of a code. Explain the function of symbols in flowcharts EG. diamond shape to represent a Yes/No function. Create a visual code of their own to represent a set of data that could be used in an algorithm.* |
|  | Students define simple problems, [design](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Design) and implement digital solutions using algorithms that involve decision-making and user input. |
| **PROCESSES AND PRODUCTION SKILLS** | Define simple problems, and describe and follow a sequence of steps and decisions (algorithms) needed to solve them [(ACTDIP010)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP010)Implement simple digital solutions as visual programs with algorithms involving [branching](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=branching)(decisions) and user [input](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=input) [(ACTDIP011)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP011) | **With explicit prompts, students can:*** **state** a simple problem and state some of its features such as who has the problem.

*EG. Teacher presents students with stimulus and the student has to identify what is the problem contained within it (such as creating interactive buttons for a user to click in a Yes/No question in a quiz).***In familiar contexts, students can:*** **identify** a sequence of instructions.
* **design** a digital solution involving a simple algorithm (using a provided sequence of steps for a similar type of problem).

*EG. Teacher provides students with a worked example of an algorithm based on similar type of problem students identified earlier. They then use this to assist them in designing algorithm for given problem.** **explore** a sequence of steps to solve the given problem.

*EG. Under teacher guidance students follow given steps to solve the previously identified problem and implement a digital solution (if possible) using a simple algorithm.* | **With prompts, students attempt to:*** **define** a simple problem by explaining what the problem is, and some features of the problem, such as what need is associated with the problem.

**In familiar contexts, with teacher guidance, students attempt to:*** **explore** different ways of describing a set of instructions in order to design a digital solution. They are able to **use** the simpler strategies of computational thinking to do so.

*EG. writing two versions of the same simple set of instructions, Eg. as a series of steps or as a blocks flowchart appropriate for a simple software animation program such as Scratch.** **produce** digital solutions by recognising a sequence of instructions and following them to reach a teacher directed purpose.

*EG. With prompts, students follow a sequence of instructions to implement a digital solution by creating simple algorithms for a multiple-choice answer in an interactive quiz or a simple Scratch animation.* | **Independently, in familiar contexts, students can:*** **define** simple problems in basic terms (**decompose** the problem to explain what the problem is and some features of the problem, such as what need is associated with the problem, who has the problem and why).

*EG. students define a problem where they have to create an interactive quiz for a topic they have studied during the term. They identify the features of the problem such as who is the target audience, what is the purpose of the quiz, how will the user navigate the quiz, what colours, sounds, images, interactive buttons will be used in response to answers.** **design** digital solutions to solve defined problems using algorithms that involve decision making and user input through interactivity.

*EG. students independently design algorithms for an interactive question on their quiz that will allow them to achieve their desired effect for a multiple-choice answer with chosen image or sound playing in response through an interactive button, or incorporating a user input and branching mechanism such as buttons in a slideshow to navigate between pages.** **explain** to others how to follow technical instructions.

*EG. students explain how to follow a set of instructions to a pre-determined audience, Eg. how to navigate an interactive book** **develop** a simple interactive digital solution using a visual programming language.

*EG. preparing the content and design of a simple guessing game that provides options in English and an Asian language (if feasible).*  | **Independently, in familiar contexts, students can:*** **define** simple problemsin detail (using the more complex strategies of computational thinking appropriately, to **decompose** different types of simple problems encountered).

*EG. students accurately define a problem where they have to create an interactive quiz for a topic they have studied during the term. They correctly identify the more complex features of the problem such as who is the target audience, what is the purpose of the quiz, the platform it needs to be implemented in and the resultant considerations thereof. They can then transfer this knowledge to define a problem for a different target audience, on a different platform, with another familiar topic.** **define** and describe the sequence of steps needed to incorporate multiple types of data in a digital solution.

*EG. students sequence the steps in selecting and downloading images and audio to create an interactive book trailer.* * **design** and **implement** interactive digital solutions to solve defined problems using algorithms that involve decision making and user input.

*EG. They make appropriate and thoughtful design decisions regarding how user will navigate the quiz, and what colours, sounds, images will be used in response to answers.* | **Independently, in new contexts, students can:*** **define and compare** different types of problems encountered.

*EG. students are posed with defining a problem for a context such as English or Mathematics, using the same parameters as used previously.* * **develop, test and modify** digital solutions to solve defined problems using algorithms that involve decision making and user input.

*EG. They make appropriate and thoughtful design decisions regarding a design solution for the problem defined previously. For instance, they have to use Scratch to create an algorithm for a Mathematics problem. They accurately**use different design tools to record ways in which their self-determined digital solutions will be developed for the new context.** **implement** digital solutions as visual programs with algorithms involving [branching](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=branching)(decisions) and user [input](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=input).

*EG. Students use visual coding programs such as Blocky, Scratch or Mindstorm to implement their digital solutions.* |
|  | Students [explain](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Explain) how the solutions meet their purposes. |
| **PROCESSES AND PRODUCTION SKILLS** | Explain how student solutions and existing information systems meet common personal, school or community needs [(ACTDIP012)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP012) | **With explicit prompts, students can:*** **state** the types of information systems are currently available in a familiar context such as the home or school.
* **state** how one of these information systems meets a common personal, school or community need.
 | **With prompts, students can:*** **explore** how information systems are used in communities familiar to them and list and categorise what they find.

*EG. they categorise according to whether it’s meeting a personal, school or community need.** **Identify and describe** what needs are being met by at least one of these information systems by doing a comparison with a non-digital version of the same system, creating a short survey and collecting data about it.

*EG. how the electronic school library borrowing system is more efficient for librarians than the old method of library borrowing cards OR surveying parents/adults about how the ATM is more efficient for withdrawing funds than waiting in line for a traditional bank teller.** **explore** a class peer’s digital solution and **identify** how it’s meeting their stated purpose.
 | **Independently, in familiar contexts, students can:*** **explain** in basic terms what needs are being met by information systems they have investigated in the home, school and community AND those they have created.

*EG. students jointly creating a short survey and collect data about how many community residents use the online library borrowing system to download e-books and why they do or do not.** **review** and **explain** in basic terms how their own and other classmates’ digital solutions meets their stated purpose.

*EG. students test the adequacy of their own and other student solutions by asking a classmate to review a digital solution and provide feedback and doing the same in return. They also do a self-review and explain what purpose is met by their solution.* | **Independently, in familiar contexts, students can:*** **explain** in detail what needs are being met by information systems they have investigated in the home, school and community AND those solutions they and their classmates have created.
* **apply** their understanding of information systems to **discuss** alternative uses and opportunities for information systems used in the classroom.

*EG. visiting a virtual museum and being able to feel the texture of historical Asian objects or to view Aboriginal and Torres Strait Islander artworks.* | **Independently, in new contexts, students can:*** **apply** their understanding of local information systems to **investigate** information systems in other countries.

*EG. Students do a comparison of information systems used in a developing and developed country, or two developed countries from different hemispheres of the world. For instance, how the criminal registry system operates in the U.S. and Australia.** **explain in detail** what are the purposes of the information systems they investigated, whose needs they meet and how and why they may differ.
 |

|  |  |
| --- | --- |
|  | Students collect and [manipulate](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Manipulate) different data when creating information and digital solutions. |
| **PROCESSES AND PRODUCTION SKILLS** | Collect, access and present different types of data using simple software to create information and solve problems [(ACTDIP009)](http://www.australiancurriculum.edu.au/technologies/digital-technologies/curriculum/f-10?layout=1) | **With explicit prompts, in familiar contexts, students can:*** **collect** **and access** a couple of different types of data when creating an information or digital solution with the teacher in response to a teacher presented problem.

*EG. students collect data relevant to their information or digital solution such as images and sound bites (taken on peripheral devices with teacher assistance). With teacher support they access data online regarding their topic of inquiry, for instance the population data of an endangered animal.* * **select** different formats or layout styles to present data as information depending on the type of data and the audience for a proposed solution.

*EG. students can present their collected or accessed data as lists, tables or graphs (though inaccuracy may be present).** **recognise** that all types of data are stored in digital systems and may be represented in different ways (such as files and folders with names and icons).
 | **With prompts, in familiar contexts, students can:*** **collect and access** different types of data when creating an information or digital solution in response to a problem investigated with the teacher.

*EG. under teacher direction students collect and retrieve data relevant to solution, such as images and sound bites taken on peripheral devices. They access data online regarding their topic of inquiry, for instance climate data for a particular geographical region, by entering key words provided by teacher in online search engines.* * **identify** different formats or layout styles (may be inappropriate) to present data as information depending on the type of data and the audience for a proposed solution.

*EG. Students present collected and accessed data as lists, tables, graphs, or simple animations depending on need, using reference charts to assist them.* | **Independently, in familiar contexts, students can:*** **collect and sort** different types of data when creating an information or digital solution in response to a self-investigated problem by:
* **collecting** data such as images, sound or video recordings related to topic of research from digital sources.
* **accessing and collecting** data from online query interfaces regarding their topic of inquiry using self-generated key words.

*EG. students collect population, climate or environmental data for a particular geographical region.** **manage** different types of data when creating an information and digital solution by:
* **selecting** appropriate formats or layout styles to present data as information depending on the type of data and the audience.

*EG. lists, tables, graphs, animations, info graphics and presentations.* | **Independently, in familiar contexts, students can**:* **organise** a range ofdifferent types of data when creating **self-determined** information and digital solutions to **self-investigated** problems by: exploring a range of offline and online sources to access data.

*EG. using a variety of peripheral devices to record and retrieve data or online query interfaces to select and retrieve data from an online database such as a library catalogue or weather records.** **manage** different types of data when creating a self-determined information and digital solution by:
* **selecting** appropriate formats or layout styles to present data as information depending on the type of data and the audience,

*EG. lists, tables, graphs, animations, info graphics and presentations,** **improving** the appearance and usability of data, for example using colour, headings and labelling of images to **organise** and accurately **identify** data,
* and **using** software to sort and calculate data when solving problems.

*EG. sorting numerical and categorical data and automating simple arithmetic calculations using nearby cells and summing cell ranges in spreadsheet or database software.* | **Independently, and in new contexts students can:*** **organise and validate** a range of appropriate types of data when creating self-determined information and digital solutions to self-investigated problems by:
* **exploring** different online sources to access data, for example using online query interfaces to select and retrieve data from an online database.
* **effectively manages** a range of data when creating a self-determined information and digital solution by:
* **selecting** a variety of appropriate formats or layout styles to present data as information depending on the type of data and the audience,
* **improving** the appearance and usability of data, for example using context appropriate and user-friendly colour, headings and labelling of images to **organise** and accurately **identify** data,
* and **using** a range of software to sort and calculate data when solving problems.

 |
|  | Students safely use and manage information systems for identified needs using agreed protocols and [describe](http://www.australiancurriculum.edu.au/glossary/popup?a=F10AS&t=Describe) how information systems are used. |
| **PROCESSES AND PRODUCTION SKILLS** | Plan, create and communicate ideas and information independently and with others, applying agreed ethical and [social protocols](http://www.australiancurriculum.edu.au/glossary/popup?a=T&t=social+protocols) [(ACTDIP013)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP013) | **With explicit prompts, students can:*** safely **explore** and manage information systems for identified needs using agreed protocols.

**In familiar contexts, students can:*** **state** ways information systems are used
* students discuss digital citizenship rules and behaviours for participating in an online environment.

*EG. not using all capital letters when expressing a strong viewpoint about a contentious matter and ensuring that the audience is aware of your identity*. | **With prompts, students can:*** safely **explore** and **manage** information systems for identified needs **using** agreed protocols by;
* **considering** ways of managing the use of social media to maintain privacy needs.

*EG. activating privacy settings to avoid divulging personal data such as photographs, addresses, and names.* * **identify** how information systems are used:
* **recognise** that all digital interactions are difficult to erase (digital footprints).
 | **Students can independently:*** safely **use** and manage information systems for identified needs using agreed protocols
* using a range of online tools to share information.
* **describe** how information systems are used
* **recognise** that all digital interactions are difficult to erase (digital footprints)
* **show** awareness that information may be received at different times.

*EG. adding entries to a class blog, participating in a web conference.*  | **Students can independently:*** safely **create** and **manage** information systems for identified needs using agreed protocols
* **organising and creating** different types of information for sharing and collaborating online,

*EG. planning the sequence and appearance of an animation, and sharing it online with students from another school,** **managin**g a project that involves students working together to publish online,

*EG. identifying how group members can help each other to avoid delays in finishing the project.** **explain in detail** how information systems are used
* **show** awareness that information may be received at different times.

*EG. adding entries to a class blog, participating in a web conference or online chat with an author, or participating in a forum on a specific topic.* | **Students can independently and in new contexts:*** safely **develop, test and modify** information systems for identified needs using agreed protocols
* **making** ethical decisions when faced with reporting inappropriate online behaviour or acknowledging digital products created by others.

*EG. making a decision based on how individuals would like to be treated by others.** **explain in detail** how information systems are used
* **show** awareness that information may be received at different times.

*EG. adding entries to a class blog, participating in a web conference or online chat with an author, or participating in a forum on a specific topic.* |