

Digital Solutions 2019 v1.2

Unit 1 sample assessment instrument

June 2018

Project — digital solution

This sample has been compiled by the QCAA to assist and support teachers in planning and developing assessment instruments for individual school settings.

Schools develop internal assessments for each senior subject, based on the learning described in Units 1 and 2 of the subject syllabus. Each unit objective must be assessed at least once.

Assessment objectives

This assessment instrument is used to determine student achievement in the following objectives:

1. recognise and describe programming elements and useability principles
2. symbolise and explain information, ideas and interrelationships related to programming problems
3. analyse problems and information related to a selected technology context
4. determine user-experience and programming requirements, and self-determined and prescribed criteria of a programming problem
5. synthesise information and ideas to determine possible digital solutions
6. generate user interface and programmed components of the prototype digital solution
7. evaluate impacts, components and solutions against criteria to make refinements and justified recommendations
8. make decisions about and use mode-appropriate features, language and conventions for particular purposes and contexts.

Subject	Digital Solutions		
Technique	Project — digital solution		
Unit	1: Creating with code		
Topic	Topic 1: Understanding digital problems Topic 2: User experiences and interfaces Topic 3: Algorithms and programming techniques Topic 4: Programmed solutions		
Conditions			
Duration	Up to 8 weeks		
Mode	Multimodal	Length	<ul style="list-style-type: none"> • 8–10 A3 pages • 2–4 minute demonstration of the functionality of the user interface and coded components of the digital solution by video recording • 4–6 A4 pages of code with annotations
Individual/group	Individual	Other	<ul style="list-style-type: none"> • The reference list is not included in the page count. • Schools implement authentication strategies that reflect QCAA guidelines.
Resources available	<ul style="list-style-type: none"> • Computers • Internet • Stimulus (technical proposal) 		
Context			
An interactive learning object is a piece of software with the primary goal of supporting learners in some way while providing entertainment. These objects can be created to provide instructional sequences and information, or model procedures. Learning objects can inspire students to learn something new or improve their skills and knowledge about something of value.			
Task			
You must document the problem-solving process used to develop and generate the user interface and programmed components of a prototype for a new or re-imagined interactive learning object. The object must address the needs of 10–13-year-old students in the stimulus. Demonstrate the functionality of the components of the prototype interactive learning object in a video recording.			
To complete this task, you must:			
<ul style="list-style-type: none"> • recognise and describe <ul style="list-style-type: none"> – programmed and user-interface components – useability principles including accessibility, effectiveness, safety, utility and learnability • symbolise <ul style="list-style-type: none"> – the user and developer problem using mind maps and one or more constructed sketches, annotated diagrams, images or screenshots – algorithms communicated in pseudocode that demonstrate knowledge and understanding of programming features – interrelationships between user experiences and programming in the prototype interactive learning object 			

- explain
 - essential features of the problem
 - code samples and screenshots from the prototype learning object with annotations
 - the prototype learning object from a user-experience perspective, communicated through a collection of annotated images of the user-interface components
 - how programming elements and user-interface components connect, communicated in an annotated diagram
 - functionality, useability and efficiency of the coded components, communicated through code comments and annotations on the 4–6 A4 pages
- analyse the prototype interactive learning object and information to identify
 - user interface and programmed components and their relationships to the structure of the prototype interactive learning object
 - the prototype interactive learning object’s personal and social impacts
- determine
 - constraints and limitations
 - existing code and user-interface solutions
 - solution requirements that include essential elements and features of the user interface based on useability principles
 - prescribed and self-determined criteria
- synthesise ideas and information about solutions for
 - user interfaces and programmed components of the prototype interactive learning object, for example annotated diagrams identifying and describing proposed components of the prototype interactive learning object
- generate
 - sample code for the digital prototype on the 4–6 A4 pages, demonstrating
 - selection
 - iteration
 - user input
 - a user interface and programmed components of a prototype for an interactive learning object
- evaluate against criteria relating to
 - personal, social and economic impacts supported by a collection of data samples or representations
 - accuracy and efficiency of the coded components supported by a collection of annotated code segments in tables, diagrams and written paragraphs identifying errors and actions
 - the prototype learning object from a user-experience perspective supported by a collection of annotated images of the provided user interface components
- make refinements and justified recommendations for current and future improvements.

Stimulus

See Stimulus material at end of document

Checkpoints

- Term 2 Week 4: Submit exploration of solutions, identification of algorithms and user interface sketches
- Term 2 Week 8: Complete draft submission
- Term 2 Week 10: Final submission

Feedback

Authentication strategies




- Students will provide documentation of their progress at indicated checkpoints.
- Students must acknowledge all sources.
- Students must submit a declaration of authenticity.
- The teacher will collect copies of the student response and monitor at key junctures.
- The teacher will conduct interviews or consultations with each student as they develop the response.

Scaffolding

Your response must include:

- headings that organise and communicate the iterative phases of the Digital Solutions problem-solving process
- A3 pages that
 - demonstrate all phases of the problem-solving process
 - communicate knowledge and understanding by way of annotated sketches, diagrams, images or screenshots
- a video
 - in mp4 file format
 - no larger than 200 MB
 - demonstrating the functionality of the prototype interactive learning object's user interface and coded components
- A4 pages of code with annotations of analysis, synthesis and evaluation related to the code element or problem
- referencing of sources, using the school's referencing style
- written and visual features, as well as grammatically accurate language conventions, to communicate decision-making.

Stimulus

<p>Persona Sarah</p> <p>Age 13</p> <p>Interests Music, fashion and art</p> <p>Hardest subjects English and Maths</p> <p>Easiest subjects Music, Art and Science</p> <p>Personality Generally happy, outgoing, patient and kind</p> <p>BYO device Windows 10</p> <p>Future pathway Considering medicine</p>	
<p>Persona Jian</p> <p>Age 12</p> <p>Interests Sport, NRL, video games, pets and building model aircraft</p> <p>Hardest subject Maths and Science</p> <p>Easiest subjects Health and Physical Education</p> <p>Personality Loud and talkative, friendly, likes to move around and can get bored quickly</p> <p>BYO device Windows 10</p> <p>Future pathway Considering physiotherapy</p>	
<p>Persona Joshua</p> <p>Age 10</p> <p>Interests Anime cartoons, Minecraft, YouTube and playing with friends</p> <p>Hardest subjects English and Music</p> <p>Easiest subjects Maths and Chinese</p> <p>Personality Quiet, happy and interested in learning new things</p> <p>BYO device Apple</p> <p>Future pathway Undecided</p>	

Images: Pixabay, [Creative Commons CC0 1.0 Universal](https://creativecommons.org/licenses/by/4.0/), accessed Apr 19, 2018

Sarah — www.pixabay.com/en/head-eyes-woman-girl-face-lips-304670

Jian — www.pixabay.com/en/young-man-male-guy-person-face-145123

Joshua — www.pixabay.com/en/boy-girl-face-portrait-headshot-30115