

Digital Technologies NCEA NZC Level 1

Subject Learning Outcomes for Assessment

Companion to the Digital Technologies Learning Matrix

What are the Subject Learning Outcomes and how can I use them?

Subject Learning Outcomes identify the knowledge and skills that students need to be ready for assessment. Subject Learning Outcomes are informed by the Achievement Standards. They should be used in conjunction with the full suite of NCEA materials. For guidance on assessment criteria, please also refer to the Achievement Standards, Unpacking, and External Assessment Specifications or Conditions of Assessment as appropriate.

Subject Learning Outcomes do not replace any documents. This includes the External Assessment Specifications and Conditions of Assessment. All NCEA materials need to be used to fully understand the requirements of each Achievement Standard and to plan a robust teaching, learning, and assessment programme. Subject Learning Outcomes should not be used to make assessor judgments. The Achievement Standard and the Assessment Schedule for Internal Assessment Activities are used to make such judgments.

Subject Learning Outcomes, alongside other key documents, make clear to teachers what to include in their teaching and learning programmes and what student capabilities to check for, in the lead up to assessment. Each Subject Learning Outcome does not need the same amount of teaching time.

All learning should connect with students' lives in Aotearoa New Zealand and the Pacific. Teachers or students usually select the contexts. As such, contexts are not always specified in the Subject Learning Outcomes. Examples may be provided to illustrate topics and contexts, but they are not prescriptive.

Students are entitled to teaching that supports them to achieve higher levels of achievement. Subject Learning Outcomes mainly align with outcomes for the Achieved level. However, outcomes for higher levels of achievement are also included.

The knowledge and skills in the Subject Learning Outcomes are the expected learning that underpins each Achievement Standard. Students will draw on this learning during assessment. It is important to note that assessment is a sampling process so not everything that is taught will be assessed.



Achievement Standard 92004 (1.1)	Create a computer program	Credits: 5
What is being assessed:	Subject Learning Outcome (Students are able to....)	
Write computer programs.	(Students are able to....) <ul style="list-style-type: none">● Use variables to store data of different data types including strings, numbers and booleans● Use variables to demonstrate how a variable value can change during program execution.● Use basic maths operations on variables like add, subtract, multiply, divide and modulus● Use comparison operations which could include less than, greater than, less than or equal to, greater than or equal to and equal to.● Use selection statements like 'if' and 'if-else' that allows code to be optionally executed based on certain conditions● Use iterative code structures that could include 'repeat' loops, 'while' loops and 'for' loops to repeat blocks of code based on conditions.● Use logical code sections including nested code where necessary● Use collections such as lists and arrays to store, access and edit values.	
Testing and debugging programs	(Students are able to....) <ul style="list-style-type: none">● Test programs for functionality by running their code and providing input<ul style="list-style-type: none">○ at higher levels the code should work on boundary and invalid input as well as the expected input● debug programs where errors are present, or the results of testing are not as expected, by interpreting error messages and taking the appropriate action to correct the errors	
Develop code that is well-structured, flexible and robust.	(Students are able to....) <ul style="list-style-type: none">● Efficiently use sequence, selection and iteration control structures in the given language by reducing unnecessary code to make the code more flexible and robust.● Write purposeful code comments that explains the intent of sections of code● Use appropriate variable names that are indicative of the values being stored● Use a logical code structure to improve code readability.● Use variables or constants in place of hard coded values (literals) to improve program flexibility	



Achievement Standard 92005 (1.2)	Develop a digital technologies outcome	Credits: 5
What is being assessed:	Subject Learning Outcome (Students are able to....)	
Describe a digital solution for a need or opportunity.	<ul style="list-style-type: none">● Describe the need or opportunity the outcome is intended to meet.● Identify and describe the potential users of the outcome.● Clearly describe the outcomes and its requirements: what it needs to do or include, in order to address the need or opportunity. This needs to include the requirements of potential users.● Describe the specifications of the outcome, including measurable criteria that are more technical in nature than the requirements.	
Apply appropriate tools and/or techniques to create a digital technologies outcome	<ul style="list-style-type: none">● Use appropriate digital tools and/or techniques to create an outcome that is fit-for-purpose● At higher levels:<ul style="list-style-type: none">○ Follow established practices in the use of tools and techniques for the chosen digital technologies domain○ Apply tools and techniques optimally (in the best way practicable) to enhance or refine the outcome	
Test and trial an outcome	<ul style="list-style-type: none">● Test their own outcome, or parts of it, to ensure that the digital technologies outcome functions correctly.● Record relevant evidence of testing● At higher levels:<ul style="list-style-type: none">○ make improvements based on testing in order to enhance and refine an outcome to improve the outcome's fitness for purpose and record evidence○ trial the outcome, or parts of it, with others, including end users, and use this information to improve the outcome, making it more fit-for-purpose.○ record relevant evidence of trialling and any improvements made on the basis of trialling.	



Achievement Standard 92006 (1.3)	Demonstrate understanding of usability in human computer interfaces	Credits: 5
What is being assessed	Subject Learning Outcome (Students are able to....)	
The purpose of human-computer interfaces	<ul style="list-style-type: none">● Describe ways that users interact with a digital product's interface and how different types of interfaces can vary significantly.● Describe how effective the user experience is in the context of specific interfaces.● For these user experiences:<ul style="list-style-type: none">○ Identify the potential users of a chosen interface○ Describe a range of possible uses or functions of the interface○ Describe how different people might use the interface in different ways.	
Usability principles and how they are used in interfaces	<ul style="list-style-type: none">● Describe usability principles by explaining what each usability principle does, how it is expected to assist the user, and how it is employed in an interface.<ul style="list-style-type: none">○ Describe how Nielsen's Usability Heuristics have been applied to an interface○ Describe how consideration of Mātāpono Māori might be evident in an interface○ Give examples from interfaces of instances where Mātāpono Māori is included:<ul style="list-style-type: none">▪ accurate use of te reo Māori, including correct use of macrons▪ support for te reo Māori in tools such as spell checking▪ support for expression of tikanga and mātauranga Māori.○ Describe how accessibility principles have been applied in an interface. Give examples and outline how the interface is made more usable for people with diverse needs or abilities.○ Describe other usability principles such as commensurate effort, internal and external consistency, learnability, short-term memory, system response time. Students may opt to describe additional usability principles that they have studied.● At higher levels of achievement, students are able to:<ul style="list-style-type: none">○ Explain how the usability principles have been applied (or have failed to be applied) in an interface, clearly pointing out where specific principles are evident and explain how they help the user's experience.○ Compare the usability of interfaces by evaluating how each of them applies usability principles or fails to address usability.	

	<ul style="list-style-type: none"> ○ Suggest improvements to an interface by identifying where specific usability principles can be applied and explaining how this would assist the user's experience. 	
Achievement Standard 92007 (1.4)	Design a digital technologies outcome	Credits: 5
What is being assessed:	Subject Learning Outcome (Students are able to....)	
Design an outcome	<ul style="list-style-type: none"> ● Use Mātāpono Māori principles of manaakitanga or kaitiakitanga to inform the design process. ● undertake research to inform the design and propose an outcome ● generate design ideas for the proposed design outcome ● make design decisions based on a range of inputs (including feedback and research) ● make clear links from initial ideas through to the final design ● complete a final design in a format appropriate for the digital technologies domain that was chosen ● Record evidence of the design process. 	
Describe a project's purpose, potential users, and requirements	<ul style="list-style-type: none"> ● Describe the need or opportunity the outcome was intended to meet ● Identify and describe the potential users of the outcome ● Identify and describe other stakeholders affected by the outcome ● Describe the requirements that the outcome needed to meet in order to address the need or opportunity, including the requirements of potential users 	
Describe manaakitanga or kaitiakitanga in relation to the outcome or the design process.	<ul style="list-style-type: none"> ● discuss manaakitanga in relation to the design outcome or the design process, for example, explain how they show respect and care for others, specifically the users of an outcome or those that may be impacted by its use. OR ● discuss kaitiakitanga in relation to the design outcome or the design process, for example, explain how they show respect and stewardship for living things and resources. 	
Consider the design's fitness for purpose	<ul style="list-style-type: none"> ● Review their design and describe how it addresses an identified need or opportunity and the specified requirements. ● At higher levels of achievements, students will be able to: <ul style="list-style-type: none"> ○ describe what design principles are and how the outcome the student designed implemented them 	



	<ul style="list-style-type: none">○ describe what usability principles are and how the outcome the student designed implemented them○ present visual evidence of how their design ideas improved based on the design decisions.○ present evidence of gathering feedback.○ Explain how feedback was used to help make design decisions.○ Describe how design ideas changed deliberately over the course of the design process and identify the <i>design decisions</i> where this occurred.○ Explain how manaakitanga or kaitiakitanga, design principles, and usability principles were considered in informing the design decisions.○ Explain and justify how these changes contributed to improving the outcome's fitness for purpose.
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