Teaching and learning programme

Web design team

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## Summary of Teaching and Learning Programme

This programme provides a structured process for students to follow to design and develop a website for a local company. This authentic process helps students to record the right evidence and makes the evidence easy for the assessor to find. It is easy to change the context to any other web outcome; only the “Authentic Context” section needs to be changed.

## By the end of this teaching and learning programme, students will be able to:

* Apply conventions to develop a design for a web outcome.
* Develop the designed outcome using an iterative process of design, testing and development.

## Duration

70 hours total, made up of the following:

* 20 hours (approximately) of prior learning on HTML and CSS coding skills at a level suitable to DDDO Progress Outcome 5 (resources for this are not included)
* 50 hours (approximately) of teaching, learning and assessment.

## Key teaching and learning concepts – the big ideas

Design and development of digital outcomes is achieved through iterative processes where evidence from testing is used to inform the process. The concepts of relevant implications and relevant conventions are explored.

## Alignment to NZC and/or Te Marautanga – (DTHM progress outcomes and progressions)

This material is focused on the Designing and Developing Digital Outcomes progression PO5

Students will:

 ...independently apply an iterative process to design, develop, store and test digital outcomes that enable their solutions, identifying, evaluating, prioritising and responding to relevant social, ethical and end-user considerations.

…use information from testing and, with increasing confidence, optimise tools, techniques, procedures and protocols to improve the quality of the outcomes.

…apply evaluative processes to ensure the outcomes are fit-for-purpose and meet end-user requirements.

## Links to other learning areas

This programme involves developing an authentic solution for a startup or small business. It could be used in conjunction with work in Business Studies or as part of an ‘Enterprise’ course.

## Teaching and learning pedagogy

Students independently follow a self-managed but guided project in which they are responsible for their own learning. Resources are provided to the student at each stage. The phases of the design and development cycle provide natural checkpoints at which the teacher/kaiako can expect to see student work.

This resource is designed to be used as a team project, but could be used individually. The resources provided are designed to be used online, but logbooks could be printed and filled in on paper if desired.

## Prior knowledge and place in learning journey

Two tutorials are provided to upskill students with no prior experience of HTML/CSS.

No prior knowledge of iterative processes, design methodologies or development methodologies is assumed.

## Resources required

A range of web browsers, which may include Chrome, Firefox and Edge

A suitable text editor, such as Brackets, Caret, Notepad++, or a web development Integrated Development Environment

Students may wish to use a wireframing or prototyping tool, such as Adobe Xd, but this is not required.

## How you might adapt this in your classroom

A broad context has been included in the task outline which gives room for students to develop individual solutions. The workbook and project log have been designed to work with any web context so that they can easily be adapted to be used with other projects. This activity works best if combined with a visit to (or other contact with) a local business or other client.

This assessment can be combined with other assessments or used in isolation.

This project could be combined with AS91897 (DT 2.8 - Use advanced processes) by requiring students to break their outcome into components, manage their project using suitable project management tools and techniques and discuss the use of these tools and techniques.

This project could be combined with AS91890 (DT 2.1 - Conduct and inquiry) by having students carry out an inquiry process to develop a context for this assessment.

## Assessment

This activity integrates assessment into the learning process and is based on a ‘just in time’ learning model or ‘learning by doing’ process. Opportunities to gather assessment data are clearly signposted and student activities are designed to collect information about student learning as well as providing opportunities for students to put the learning into practice.

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# Term Outline

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| **Specific learning or assessment activity**(refer to Workbooks) | **Duration (hours)** | **Learning activities**(see Student Workbooks for details) | **Resources** |
| Prior learning | Up to 20 | Students could use Prior Learning Tutorial 1 and 2 to recap the basics of HTML and CSS coding and introduce some Level 2 NCEA skills.Further tutorials are linked to in these documents, including:[w3Schools Bootstrap tutorial](https://www.w3schools.com/bootstrap/default.asp)[W3schools How To guide](https://www.w3schools.com/howto/default.asp)[W3schools W3.CSS tutorial](https://www.w3schools.com/w3css/default.asp)Students could also use paid tutorial sites such as [codacademy](https://www.codecademy.com/catalog/subject/all) or [code avengers](https://www.codeavengers.com/) but these may require a subscription.If students are using a specific prototyping tool, wireframing tool or integrated development environment then they may need to complete a familiarisation activity provided by the software supplier. | Prior Learning Tutorial 1 and 2 |
| **DESIGN SPRINT**(refer to Workbook) | (up to 20 hours) | The following activities are described in detail in the **Student Workbook - Design Process**Students use the workbook to guide their activities and record their evidence in the **Project Log - Design Sprint** |
| Pre-Sprint | 2 - 3 | Investigate relevant conventions | Internet |
| Phase 1 - Understand | 2 - 3(can be shortened if following inquiry) | Unpack the problem - select from:Mindmap/Brainstorm/Braindump/BrainwriteSpace saturate and groupValue proposition canvasOutline the problem | VP canvasProject logPOV template |
| Phase 2 - Ideate | 2 - 3 | Identify conventions to be appliedDoodle design ideas (quick sketches)Crazy-8s (8 sketches in 8 minutes)Solution sketches (more detailed drawings of prefered designs) | Sketching toolsBasic wireframe tool |
| Phase 3 - Decide | 2 - 3 | Explain relevant implications (complete log book table)Decide - choose a design (group discussion)***(may be helpful to record discussion audio)***Explain design choice | Relevant implications resourceAudio recording or notesProject log |
| Phase 4 - Prototype | 2 - 3 | Generate a testable design (draw detailed design or use a prototyping tool like AdobeXd) | Wireframe tool or paper |
| Phase 5 - Test | 2 - 3 | Get feedback by testing prototypeCarry out research into existing outcomesRefine outcome / Make improvements | Wireframe tool or paper |
| Post-Sprint | 2 - 3 | Review the design process**5 minute interview with assessor (or written summary if prefered)** | Audio recorderAssessor |
| **DEVELOPMENT PROCESS** | (up to 30 hours) | The following activities are described in detail in the **Student Workbook - Development Process**Students use the workbook to guide their activities and record their evidence in the **Project Log - Development Sprints** |
| Development Sprint 1 | (8 - 10 hours) |  |  |
| Phase 1 - Plan | 1 | Make notes in project logTeam discussion | Project log |
| Phase 2 - Design | 1 | Sketch new designsTrial/Model new ideas (e.g. new fonts)Team discussion | Project log |
| Phase 3 - Develop | 4 - 6 | HTML and CSS CodingImage editing and curationBasic testing (viewing in browser) | Text editor or IDE |
| Phase 4 - Review | 1 - 2 | TestingThis could include using HTML validator, different browsers, different devices and visual impairment simulators.Seek and record feedback on outcome so far. | ValidatorBrowsersVisual impairment simulator |
| Development Sprint 2 | (8 - 10 hours) |  |  |
| Phase 1 - Plan | 1 | Make notes in project logTeam discussion | Project log |
| Phase 2 - Design | 1 | Sketch new designsTrial/Model new ideas (e.g. new fonts)Team discussion | Project log |
| Phase 3 - Develop | 4 - 6 | HTML and CSS CodingImage editing and curationBasic testing (viewing in browser) | Text editor or IDE |
| Phase 4 - Review | 1 - 2 | TestingThis could include using HTML validator, different browsers, different devices and visual impairment simulators.Seek and record feedback on outcome so far. | ValidatorBrowsers[Visual impairment simulator](https://www.color-blindness.com/coblis-color-blindness-simulator/) |
| Development Sprint 3 | (8 - 10 hours) |  |  |
| Phase 1 - Plan | 1 | Make notes in project logTeam discussion | Project log |
| Phase 2 - Design | 1 | Sketch new designsTrial/Model new ideas (e.g. new fonts)Team discussion | Project log |
| Phase 3 - Develop | 4 - 5 | HTML and CSS CodingImage editing and curationBasic testing (viewing in browser) | Text editor or IDE |
| Phase 4 - Review | 1 - 2 | TestingThis could include using HTML validator, different browsers, different devices and visual impairment simulators.Seek and record feedback on outcome so far.**Final development evaluation interview**Team discussion and evaluation of development process | Audio recorder |

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Assessment Task: Design and Develop a Web Outcome

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| --- | --- |
| **Curriculum Key Concepts** | *Designing, developing a digital outcome (DDDO) PO5**...independently apply an iterative process to design, develop, store and test digital outcomes that enable their solutions, identifying, evaluating, prioritising and responding to relevant social, ethical and end-user considerations.* |
| **Achievement standard(s)** | *AS 91891 v1 and AS 91893 v1**Apply conventions to develop a design for a digital technologies outcome**Use advanced techniques to develop a digital media outcome* |
| **NCEA Level** | 2 |
| **Credits** | *7* |
| **Learning time guidance** | *70 hours* |
| **Length guidance if appropriate** | *Web outcome should include links to at least 3 pages or sections and should include a range of semantic elements (e.g. header, footer, nav, section)**Project Log for Design Process is 13 pages**Project Log for Development Process is around 15 pages* |
| **Due date** | *xx* |

**Achievement criteria[l1]**

|  |  |  |
| --- | --- | --- |
| **Achieved** | **Merit** | **Excellence** |
| Apply conventions to develop a design for a digital technologies outcome | Apply conventions to develop an informed design for a digital technologies outcome | Apply conventions to develop a refined design for a digital technologies outcome |
| Use advanced techniques to develop a digital media outcome | Use advanced techniques to develop an informed digital media outcome | Use advanced techniques to develop a refined digital media outcome |

# Overview

This assessment activity requires you to apply conventions to design a website and use advanced techniques to develop your design.

# How will you be assessed?

You will be assessed on how successfully you follow a design and development process and how successfully you explain or justify your design choices. Two **project logs** are provided for you to record your evidence.

You may work individually or as part of a team.

# Your task

You are going to design and develop a website for the following authentic context:

# Authentic Context:

You and your team are the web design team for a local business.

You may have chosen this business yourself, been given it by your teacher, visited a real local business or set up your own business (e.g. as part of a Young Enterprise scheme).

Your task is to **design** and **develop** a web interface for potential customers to find out about the business and view the different products/services that are available. Your design process will help you to determine precisely what services your web outcome will offer and precisely who your users will be.

You will complete a design phase and development phase (assessed against different standards). As you will use **iterative processes**, you may find that there is overlap between the two phases, and you will not be penalised for beginning development early or for re-designing part or all of your outcome during the development phase.

# What you need to do

You need to complete two phases. Start by reading the information below.

Phase 1: Complete the design process section using your student workbook to assist you. You will record your evidence in your Project Log (Design sprint).

Phase 2: Complete the development phase using your student workbook to assist you.

You will then hand in a completed web interface.

## Phase 1:

## Design Process (assessed against 91891)

A design process resource is provided: **Student Workbook - Design Process**.

This is accompanied by a logbook for recording the evidence: **Project Log - Design Sprint**

Following this process will guide you through the steps below. There will be opportunities for you to make independent choices about the tools and techniques you use.

You must ensure that you investigate and apply **appropriate conventions**. Following the design process will help you to research these conventions and give you the opportunity to apply them in your design. You should try to **explain how your design uses conventions**.

You must ensure that you **explain relevant implications**. It is **not sufficient** just to discuss how you will address them - you must show that you understand what each relevant implication is and explain why it is relevant. You should try to **address all relevant implications**

You will need to generate **a range of design ideas**, **model** them, and **select an appropriate design**. You must **explain why it is appropriate**

To develop an **informed design** you will need to collect **feedback** on your design (this could be from teachers/kaiako, peers, end-users or others), and you will need to **use this feedback to improve your design**.

You should try to **justify** (give reasons and evidence) how your design addresses relevant implications, end-user considerations and uses appropriate conventions. You may be given the opportunity to record this evidence in an audio interview.

## Phase 2

## Development Process (assessed against 91893)

In the development phase you will follow an iterative development cycle to develop, test and improve our outcome. The resource provided will guide you through the steps in this cycle: **Student Workbook - Development Process.** This is accompanied by a logbook **Project Log - Development Sprints** in which to record your evidence

You should aim to follow the cycle at least twice and probably three or four times.

You may create your own photos or illustrations, or use Creative Commons / Public Domain resources. If Creative Commons materials are used, care should be taken to ensure that the work is attributed in accordance with the license that has been applied to the work.

Your website development will need to include at least 2 **advanced techniques**. These are described in the guidelines below.

You will need to choose **appropriate tools and techniques** suitable for the purpose and end users you identified in your design (these may evolve throughout the iterative process, but you must be clear if this happens)

Your web outcome will need to use **relevant conventions**. You will have identified these in your design process, but you will have the opportunity to identify and apply more in the development process. These are described in the marking schedule.

You need to **explain relevant implications**, but it is assumed that you already did this in the Design Process. You should try to ensure your design **addresses relevant implications**.

You should try to use **efficient tools and techniques** when making your outcome. These are described in the guidelines below.

Guidelines Resource

# Design Process

An **informed design** is one that is **improved based on feedback**. This means that you will need to submit at least 2 versions of your design with clear evidence of improvement based on feedback, as well as including evidence of the feedback you received. This improvement can also be counted as evidence towards a **refined design** in AS91893.

An **informed design** is one that **addresses relevant implications**, which means that you have avoided or overcome any potential negative implications (such as breaching laws or ethical rules) in your design, and successfully gained positive implications (such as being aesthetically pleasing, easy to use or well-suited to your end-user)

An **informed design** includes an **explanation** of how the design **uses appropriate conventions**. You will need to not only apply the appropriate conventions, but **explain** how you did so, giving reasons for how your choices use conventions.

A **refined design** includes a **justification** of how the design uses appropriate conventions and addresses implications and end-user considerations. This means you will need to provide **reasons and evidence** of the quality of your design. This evidence might include:

* Reference to feedback you received
* Reference to investigation or research you did
* Results of modelling or testing a prototype
* Reference to how your outcome meets specific objective criteria (e.g. usability heuristics)

# Development Process

For your outcome to be considered **informed**, you need to **apply** these conventions during the development phase to **improve the quality** of your outcome. It should be clear how the outcome was made better through applying conventions - it is not sufficient simply to show that conventions were applied.

### Relevant Conventions might include:

Website file naming and folder conventions followed

HTML and CSS code layout conventions followed

Semantic HTML conventions followed

Image type and size conventions followed

Most basic web conventions (e.g. nav at top) followed

Website follows conventional visual hierarchy

Conventional design style used (e.g. material design, flat design)

### Advanced Tools and Techniques include:

These might include

* creating or customising scripts, code or presets
	+ You could create or customise javascript scripts or css styles for an image carousel, collapsible menus, hoverable buttons or responsive elements
* using a combination of steps to manipulate or enhance elements
	+ You could manipulate images using a range of tools in an image editor before using them, or use a combination of css styles to enhance part of the page (e.g. add a dropdown with hover effects to a nav bar)
* using a third-party library
	+ You could use jQuery, Bootstrap, W3.CSS or another third-party library to create, enhance or style elements of your webpage
* using composite effects

### Data integrity and testing procedures include:

Naming your files appropriately

Organising your files and folder appropriately

Keeping backups

Submitting the correct files in the manner required by your assessor

Testing with a color blindness or visual impairment simulator

Proofreading (of code and the completed outcome)

Testing functionality in a browser

Testing the website in multiple browsers

Getting feedback from users or other usability testing

*Validating your HTML and CSS code*

*Asset management (e.g. using an asset management tool to manage versions or collaborate)*

*Optimisation of media assets (e.g. using an image optimiser)*

*Commenting your HTML and CSS*

You also need to **explain the relevant implications**. If you successfully completed the design sprint, then you will have already done this.

To be an **informed outcome**, you will need to **address the relevant implications**.

To create an **informed outcome** you need to **use information from testing procedures** **to improve the quality of the outcome**. This means you need to provide evidence of

1. The information you got from testing procedures (e.g. screenshots, feedback)
2. The way this was used to improve the outcome
3. Version of the outcome (and screenshots of it) before and after the changes

For your outcome to be considered refined, it needs to be a high quality outcome.

In addition, a **refined outcome** must show **iterative improvement throughout the design, development and testing process**. This means that you need to follow the design cycle through at least 3 times, showing improvement at each stage.

A **refined** outcome is produced using **efficient procedures**. Procedures in *italics* above are considered to be *efficient*.

**The marking schedules can be found in the attached documents.**