Level 6 – New Zealand Curriculum

Digital Technologies | Hangarau Matihiko

Teaching and learning programme

Digital media: Database _ website

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Summary

The teaching and learning programme is based around an eBook/tutorial that includes embedded video. Students are provided with detailed instructions or walkthrough showing how to create a fully functioning, refined database and website using HTML, CSS, SQL and PHP. It is assumed that students have previously completed achievement standard 91880 and/or that teaching and learning has covered the skills to create basic HTML and CSS websites.

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

- develop a refined digital information outcome in a database context.

Duration (terms, weeks, teaching periods)

7 weeks including assessment; this assumes five hours' class time per week.

Key teaching and learning concepts – the big ideas

- Websites can be created using HTML and CSS.
- We can populate our website with a database backend.
- Queries can be used to find specific information and this can be displayed via a webpage.
- Both HTML and CSS should be validated to ensure that the final outcome is robust and future-proof.
- A well-designed site is easy to use. Usability should be confirmed by doing simple usability testing.

Alignment to NZC and/or Te Marautanga

Students will:

- design and develop a basic database and website outcome
- ensure that their outcome is easy to use (preferably by including some usability testing as part of the process)
- be ethical when it comes to designing and creating their outcome. Specifically, they will honour copyright and will also respect their users' privacy.

Links to other learning areas

This programme involves documenting several books that students have read and could be used in conjunction with English achievement standard 90854.

Teaching and learning pedagogy

The programme makes considerable use of 'flipped' learning, where the process has been videoed and students are encouraged to create their own practice database and website by following the video tutorials. They are also encouraged to go beyond the basics where possible. Using an eBook with embedded video means that teachers are free to work with individuals and trouble-shoot in a way that would not be possible using more traditional methods. Teachers could encourage students to collaborate and work in small groups during the teaching and learning.

Prior knowledge/place in learning journey

It is assumed that students are able to create basic websites using CSS and HTML. Most should have successfully completed AS91880.

Resources required

- An internet connection
- A suitable text editor (I recommend using Brackets)
- A modern browser (Firefox is ideal, Chrome is OK. Internet Explorer would be a browser of last resort as it does not have a developer console.)
- Access to a PHP and database environment. Using XAMPP / local host is one option.

Software used:

- XAMPP (phpMyAdmin)
- Brackets
- GIMP (for minor image editing)
- Firefox or Chrome
- Draw.io
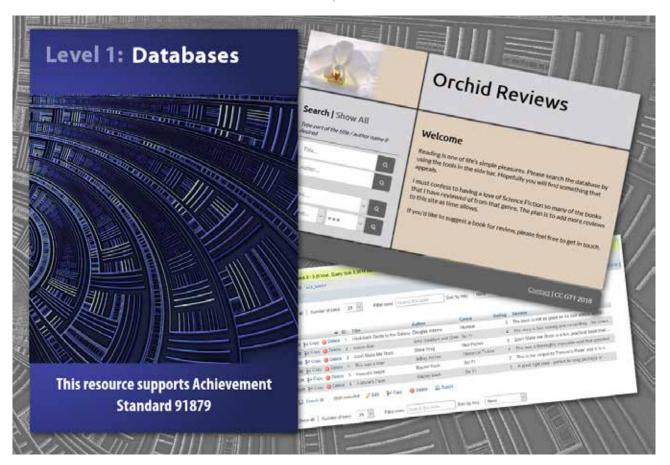- QiuReader (Mozilla) or Readium (Chrome)

How you might adapt this in your classroom

The task or the content of the database can be changed to any situation where there is data that users might want to search or filter. This could include keeping track of a collection of items, fact sheets on animals or plants (where each fact sheet is one entry in the table), or even competition results for a sports team.

Differentiation occurs through the sophistication of the student outcomes. Students working at a basic level might only have one way to search for a book's rating (eg, only has 'equal to' rather than the 'more' and 'less' options). Students working at a high level might investigate how to include images in their database entries (ie, store the link to the image and then ensure that the image is displayed on a hosted site).

Assessment

A full assessment task will be created for this programme. A default task will be provided that asks students to create a database and website reviewing some of their favourite foods or eating establishments. It is hoped that students aiming for Merit and Excellence grades will go beyond the basics in their assessment and use this an opportunity to create a high-quality outcome that shows what they have learned. It is recommended that ten hours is provided for the assessment, giving students two weeks of class time to create their database and website and the associated documentation.

Term 1	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Topics covered		**Basic Databases (91879)**					
Week Plan	Planning / DB set-up	Page set-up	Queries		Usability testing	Assessment	

Term outline

The Learning context:

What is being covered	Approximate duration	Specific Learning Outcomes Students will be able to:	Learning Activities	Resources
Plan outcome and create a database	5 hours	• Create a plan for their database and website • Set up the basic structure of the first page.	• Download required software if using own device • Download ePub and support files • Set up a folder structure • Create a wire frame for the site • Plan and create the database. Pay particular attention to the data types chosen for each field **Checkpoints** **Checkpoint 1:** Submit the following: • Site wireframe (scan or screenshot) showing what the results screen might look like • Screenshots showing that database has been created.	**Software** • Firefox • Brackets • XAMPP • Draw.io (wire framing) **Plugins (Firefox)** • QiuReader • FireShot

The Learning context *(continued)*:

What is being covered	Approximate duration	Specific Learning Outcomes Students will be able to:	Learning Activities	Resources
Create index page	5 hours	• Create the first page of the site	• Recycle a previous website to create an index page • Create server side includes for repeated material • Recolour the page (time permitting). **Checkpoint 2:** Submit the following: • Screenshot of your index page with 'new' colours. Irrelevant material from the 'old' site should be removed. *Teacher note: You could ask students to submit their code instead of a screenshot, but screenshots are quick to mark and should give an indication of whether students have done the required work.*	• ePub and documentation template

The Learning context *(continued)*:

What is being covered	Approximate duration	Specific Learning Outcomes Students will be able to:	Learning Activities	Resources
Queries	10 hours	• Create a series of queries to display information in the database on the website • Create a search area to allow users to search through the database.	• Create a page that shows users all of the entries in the database • Create a query that allows users to search by title (or part of a title) • Create a query that allows users to search by author name (or part of an author's name) • Create a query that allows users to search by genre (using a drop-down) • Create a query that allows users to search by rating. **Checkpoint 3a:** Submit the following: • Screenshots showing that your database and website are linked (ie, a screenshot of the page that shows all entries in the database). **Checkpoint 3b:** Submit the following: • Screenshots showing that the title, author, genre, and rating queries work as expected. *Teacher note: Generally I will take a student's word that their HTML validates and will spot-check pages. If the contact page validates, the rest of the pages are usually fine, too. If you do want to spot-check student code, ask them to submit their code as well as the associated screenshots. (It will take longer to mark.)*	

The Learning context *(continued)*:

What is being covered	Approximate duration	Specific Learning Outcomes Students will be able to:	Learning Activities	Resources
Usability	5 hours	• Confirm that the database is easy to use by getting a volunteer to test it.	• Get a volunteer to test the database and website in terms of usability • Make notes on anything that requires changing • Take 'before' screenshots • Fix the issues • Take 'after' screenshots showing how the outcome has been refined • Write one or two line notes or justifications, where necessary, explaining how you refined the site. **Checkpoint 4:** Practice database and website • Submit your practice outcome and documentation, which should include the results of your usability testing.	• Usability 'script'