

Digital information – database and spreadsheets

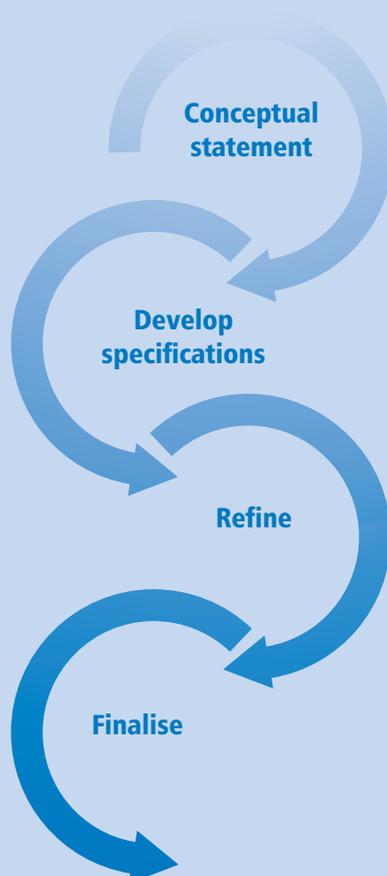
Technological Practice Strand: Brief Development

In this chapter you are going to develop your database and spreadsheet skills and understand the 'Brief Development' strand of the Technology curriculum.

The NCEA development focus for this chapter is AS 91044 (AS 1.1) 'Undertake brief development to address a need or opportunity' and AS 91071 (AS 1.41) 'Implement basic procedures to produce a specified digital information outcome'.

When you have worked through this chapter, you should be able to:

- identify a need or opportunity and establish a conceptual statement that shows an understanding of the target audience
- justify the focus and nature of an outcome
- develop specifications for an outcome that will allow thorough evaluation
- refine your conceptual statement and specifications through the development of your outcome
- finalise your brief and justify the fitness for purpose of your final outcome.



Understanding the key words

Need	a requirement for an outcome to be created to meet a specific purpose
Opportunity	a possibility for an outcome to be created to meet a specific purpose
Conceptual statement	a summary about an outcome that explains what that outcome is for, for whom and why it is needed
Specifications	specific details about the requirements an outcome must meet; specifications must be measurable
Fitness for purpose	if a product or an outcome meets the needs that it was designed to meet, it is 'fit for purpose'

What is a database?

A **database** is a collection of **data** that is usually stored on a computer and can be accessed in many ways. A database can be something quite simple and small or it can be really big and hold millions of pieces of information. Let's look at a few examples.

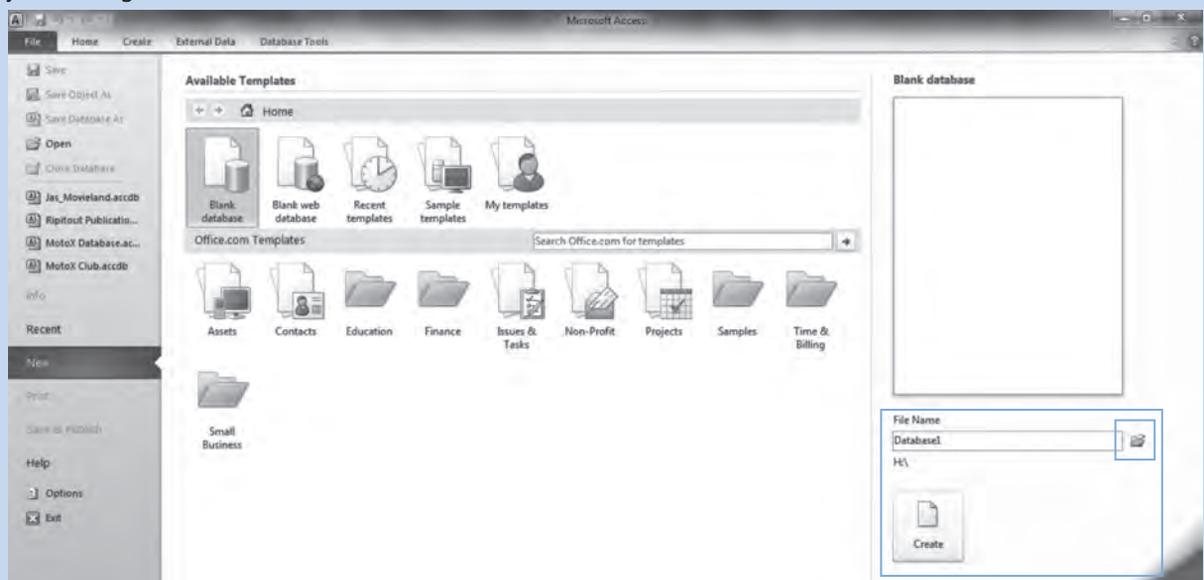
Every time a teacher takes the register, the computer system that the school uses is storing information about students (for example, absences) on a database and this information can be accessed by others – such as the Head of Year – to see who has been absent, and when.

An example of a bigger database is one that a supermarket – like Countdown or New World – would use. Each time an item is scanned at the check-out, a database is recording this sale. The database can be accessed by staff in the stockroom and they can use this data to replenish shelves when items are running low. This instant electronic recording of data also enables the stock manager to order more of a certain item when necessary.

Getting our own database started



We are going to use application software called Microsoft Access™ to create and use a database, so look for this icon on your desktop. You might need to do a quick search of the program menu. Access is a bit different from other programs like Word™ or PowerPoint™ in that you need to save your file first, before you can begin.



Page 52 shows a screen print of the screen you should be looking at when you first open Access. If you are using a different version of Office™, it might look a little bit different in terms of the style. We are going to start with a blank database but need to ensure that we save it to the correct location and that we give it a sensible filename before we begin.

In our school, the network defaults to the 'My Computer' location. Students save their work to this location, because if they do not, once they have logged off and later log on, they will not be able to find their file again. Students need to select the yellow file icon and tell the computer where their files are saved. In our school, this is the H:\ directory. This might not be the same in your school's system, so write below the directory you should save your files in (ask your teacher if you are not sure).



At school, my files are saved in _____ directory.

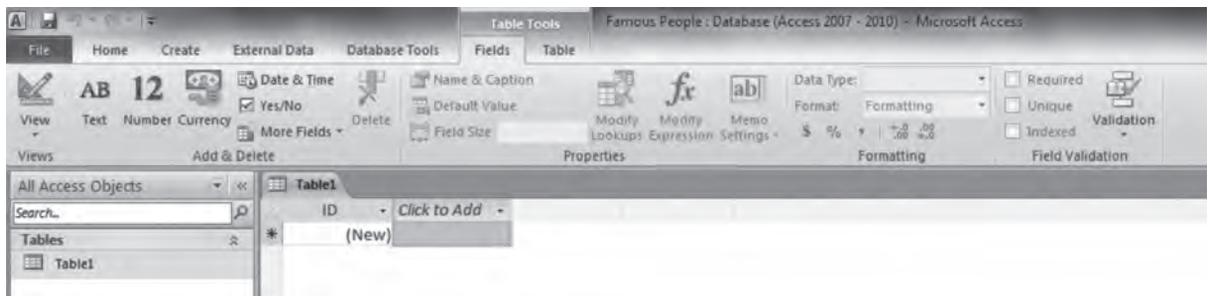
Creating a database table

Before you select 'create', you need to choose a sensible filename so that you will recognise what your database is about when looking through your files at a later date. We are going to create a database with data about famous people, so the database is going to be called 'Famous People'.

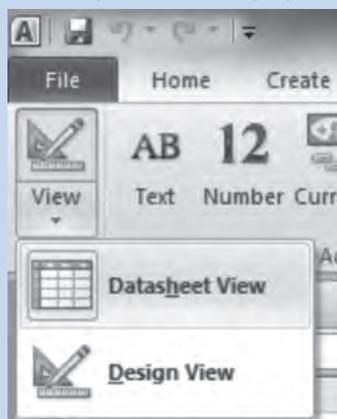


Activity 4A – Choosing a file name in Microsoft Access™

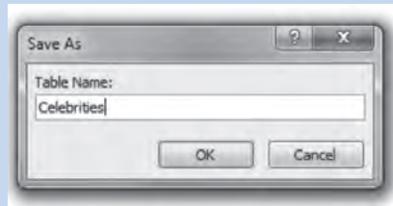
1. Open Access and choose the correct file location for your database, and a filename as described above. You should then be looking at the screen shown below.
2. Using your pen, circle the filename we have given to this database in the image below.



A database can contain several 'objects', the first of which is usually a table. This is where you set up how you want to store your data and set rules about how you want it displayed.



Your table can be viewed in two different ways: 'Datasheet' view and 'Design' view. It's easy to remember which one is which because when you want to change the design on your table, you need to be in 'Design' view and when you want to see your data you need to be in 'Datasheet' view.

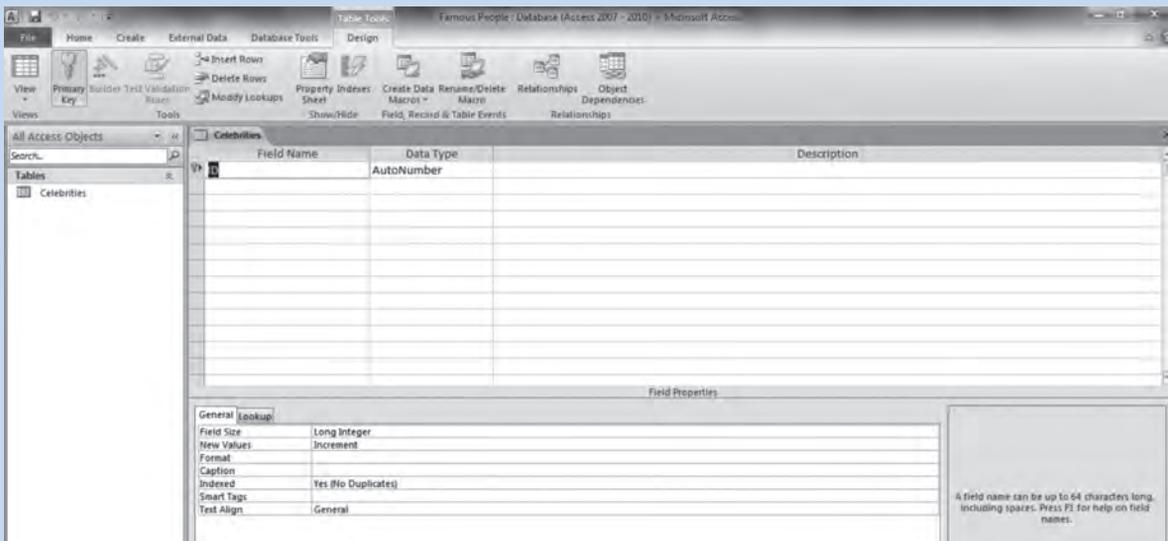


You need to change to 'Design' view, but first the computer will ask you to save your table. The name 'Table1' is not very meaningful so let's change the name to 'Celebrities' and then click on 'OK'.



Click back and forth a few times between the two views until you are confident which one is which.

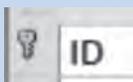
There are quite a few important things you need to understand about the screen you are looking at, so we'll discuss each one.



First of all, you will see the name of your table in two places: it is in the objects panel and also on the top tab. Using your pen, circle to show you have identified these.

Second, you will see the words 'Field Name' and 'Data Type'. These are used for setting up tables and we will look at them individually below.

'Field Names' are the same as column or row headings in a **spreadsheet**, so they are categories of information. Some common examples are name, address, gender, age, and income. Another common field name is ID or username – giving a set of data an ID or username is a way of identifying each piece of information with a unique code, in case some pieces of information are the same in other ways (for example, two people might have the same first name and surname, but if they have IDs in the database, the data belonging to each will not be confused). You will notice that Access has already put 'ID' in as the first field name. This is a default setting that you will see every time you create a new table.



You will also notice that next to the data contained in this field is a small key. This is known as the 'primary key' and means that the data in this field is unique and cannot be duplicated (doubled-up).

You don't have to set a primary key in your table but it is always a good idea when there is a lot of data and a risk that duplicates might occur. We will cover this in more detail later on.

Digital media – web design

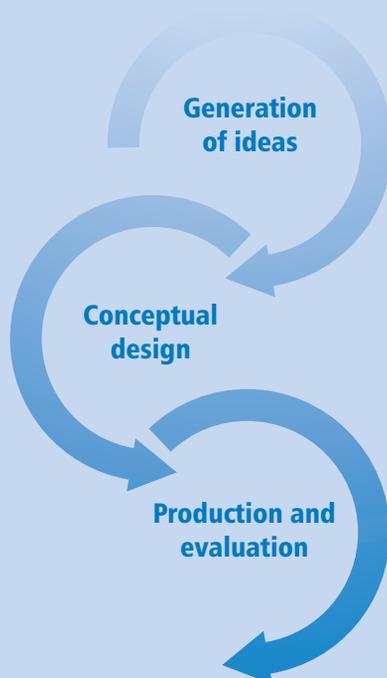
Technological Practice Strand: Outcome Development and Evaluation

In this chapter you are going to develop your web design skills using the coding language called 'HTML' and understand the 'Outcome Development and Evaluation strand of the Technology curriculum.

The NCEA development focus for this chapter is AS 91046 (AS 1.3) 'Use design ideas to produce a conceptual design for an outcome to address a brief' and AS 91073 (AS 1.43) 'Implement basic procedures to produce a specified digital media outcome'.

When you have worked through this chapter, you should be able to:

- describe design ideas
- undertake functional modelling to develop design ideas into a conceptual design
- produce and test a prototype of a website
- evaluate the 'fitness for purpose' of the final outcome against the original brief.



Understanding the key words

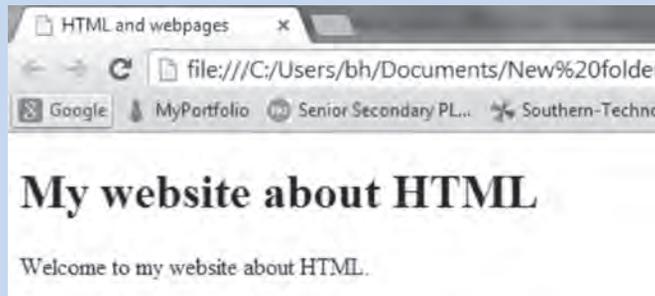
Functional modelling	the progression of a design from the first ideas to the final product
Conceptual design	sketches (either hand-drawn or drawn on computer) that show the placement of elements such as text and images for a design
Design brief	a written explanation that is given to the designer to explain the aims, objectives and milestones of a project
Prototype	a version of your design that will be used to test and find errors before agreement is reached on the final version
Fitness for purpose	deciding whether your outcome is able to do ('fit for') what it was created for
Final outcome	the final version of your design that should meet all of the specifications given in the original brief

What is HTML?

HTML stands for '**Hypertext Mark-up Language**'. It is the name of the computer **programming language** that every webpage is written in. Like any language, HTML has 'rules' or ways of doing things that will ensure that our text or images display the way we want them when they are viewed in a **browser** such as Chrome™.

What does HTML look like?

Below is an example of a very basic webpage and the **HTML** (known as '**source code**') that was used to create it.



This is the example webpage displayed using Google Chrome™

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML and webpages</title>
  </head>

  <body>
    <h1>My website about HTML</h1>

    <p>Welcome to my website about HTML. </p>

  </body>
</html>
```

This shows the HTML that was used to create the webpage above

In this chapter you will learn how to structure (set up) your webpage and then how to enhance it (make it pretty!).

Which application software to use?

The application software that you will need in order to create a website is software that has a 'text editor' function. An example is 'Notepad', which can be found in the 'accessories' menu of Windows. You can also, if you prefer, download free software called 'Notepad++', from <http://notepad-plus-plus.org/>.

Important note: Make sure that you have permission to download this software onto the computer you are using.

Notepad++ is the software that was used to create the example website in this chapter. Notepad++ is really useful because it colour codes the tags and makes it easier to see the different parts on the page.

Basic structure tags and what they mean

Look carefully at the image showing the HTML coding above and you'll see **blue words** enclosed in `< >` symbols. These are called '**tags**' and are like instructions or road signs that tell the computer what you want it to do or display. There are opening tags that start the instruction and closing tags that finish the instruction. The very first tag on every document needs to tell the computer which language you are using and at this level the tag is `<DOCTYPE html>`. (This will make more sense as we go along, so don't worry too much if this seems a bit odd.)

Here is a list of the most important structure tags for HTML.

<code><html></code>	Tells the computer that you are about to start writing in html language
<code></html></code>	Tells the computer that this is the end of the code
<code><head></code>	This is where important information about the webpage goes. This includes tags that search engines use to find webpages (called metatags); tags that style the webpage (known as ' Cascading Style Sheets ') and the title (see below).
<code></head></code>	Tells the computer that this is the end of the heading
<code><title></code>	Goes within the <code><head></code> tag and is the title of the page – but this is not what is displayed on the webpage. The title can be found in the top corner of the browser as shown below
<code></title></code>	Tells the computer that this is the end of the title
<code><body></code>	This is very important and everything within the body tags is what will display on the actual webpage
<code></body></code>	This tells the computer that you have finished the display, before ending with the <code></html></code> tag (see above)



Activity 5A – Getting started

Step One: You need to save your document before you start working on it (see Chapter 1). The reason for this is that if you don't save right at the beginning, you may put a lot of effort into creating a fantastic webpage but then lose it all because of power failure or some other problem.

Saving a webpage document is a little bit different from what you are used to in Microsoft Word™. You need to tell the computer that you are creating an HTML document. Do this by putting the file extension '.html' after the filename. Look at the example below.



When we look in the folder, this file will have a web browser icon next to it so we'll know we have saved it correctly (your icon might be different if you're using Firefox or Internet Explorer).



Handy tip: If you close the **text editor software** you are using (for example, Notepad++), the next time you want to work on your webpage, you will need either to go 'File > Open' to find your document or to right-click on the file and choose the 'Open with' option and then select the text editor software you were using.

Step Two: Enter the tags and text below, exactly as shown.

```

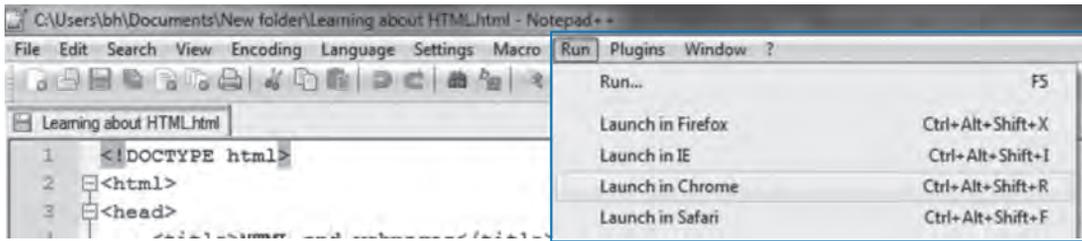
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>HTML and webpages</title>
5  </head>
6
7  <body>
8      My webpage about HTML
9
10 </body>
11
12 </html>

```

- If you're using Notepad++ your tags should go blue if you have done them correctly.

Step Three: Use 'CTRL+ S' to save what you've done, and now you can go and see what it looks like in a browser.

- If you are using Notepad++, use the 'Run' menu as shown below.



- If you are using Notepad, then double-click on the file in your folder so that it activates your Internet browser.

Step Four: Check the screen of the person’s next to you to see if theirs looks exactly the same as what is shown below. If so, sign your name and add the date to show you have checked it. If it doesn’t display correctly, offer some help and see if you can work out what isn’t correct.

Correct answer:

My webpage about HTML



Peer check sign-off.

Name: _____ Date: _____

Metatags

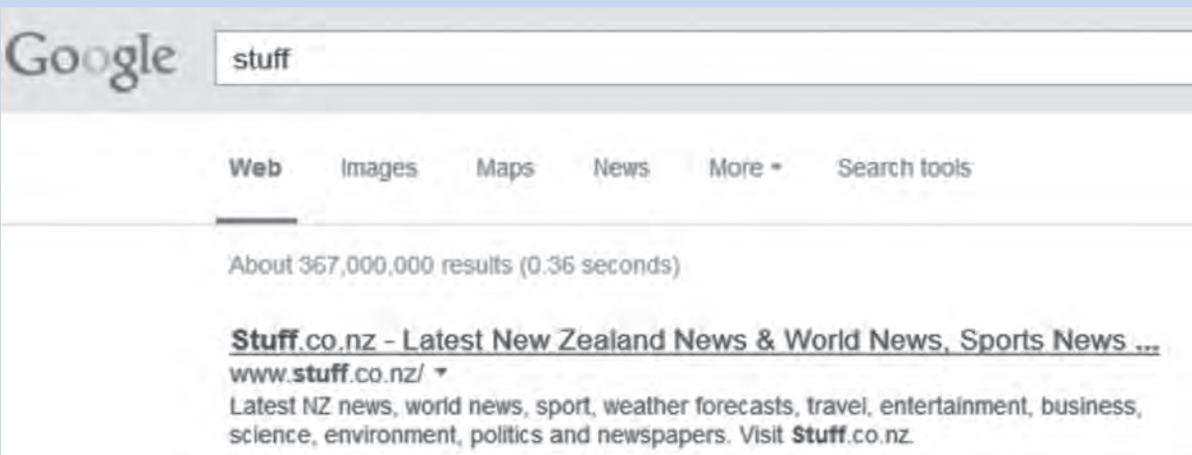
Earlier we mentioned ‘metatags’ and that these are found in the <head> tag of a webpage. Metatags are used in search engines to return results. Here is an example of the ‘source code’ from www.stuff.co.nz

```

5 <head>
6 <!-- Page generated: 11:10:01 22-Jan-2014 -->
7
8 <!-- start of components/ homepage_header-->
9 <meta name="verify-v1" content="RazN1YjuvNuEsMeFXxfR919cDZIKxcq2VjQZA25CHgM=" />
10 <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
11 <title>Stuff.co.nz - Latest New Zealand News & World News, Sports News & NZ Weather Forecasts</title>
12 <meta name="robots" content="noarchive">
13
14 <meta name="description" content="Latest NZ news, world news, sport, weather forecasts, travel, entertainment, business, science,
15
16 <meta name="keywords" content="stuff, latest, breaking, new zealand, nz, world, news, sport, sports, weather, forecast, forecasts,

```

What this means is that if you went to Google and typed in one or more of the ‘descriptions’ or ‘keywords’ listed above – such as ‘stuff’ – then Google would go and ‘look’ in the metatags of websites to match ‘stuff’, and return these website addresses as results.





Extension/Homework task: Metatags

- Look at the source code of these two websites and write down the <meta name> tags for 'description' OR 'keywords'. You can access the source code of any website by selecting CTRL + U on your keyboard.

a. <http://www.metservice.com/national/home>

b. <http://www.headspace.org.nz/young-people/>

- Choose two websites that interest you. Look at their source code and write down the <meta name> tags for 'description' OR 'keywords'.

http://_____

http://_____

Further tags to add enhancements

Headings

There are six heading **tag pairs** you can use starting with <h1> ... </h1>, which is for the largest size of heading, up to <h6> ... </h6>, which is for the smallest size of heading.



Activity 5B – Changing heading size

- Add the <h1>...</h1> tag pair as shown below to your heading, then see if your heading matches the one in the example.

```
<body>
  <h1>My website about HTML</h1>

```

This is what it looks like in Notepad++

My website about HTML

This is what it looks like in Chrome

- Experiment by changing the <h1>...</h1> tag pair to <h2>...</h2>, <h3>...</h3>, etc. up to <h6>...</h6>. Look at the difference in heading size when you save and refresh your browser. Change the heading tag pair back to <h1>...</h1> when you have finished.

ANSWERS

Chapter 1 Basic concepts of information management

Suggested solutions

Activity 1D – Data protection (page 4)

1. b. Saved his work to the school system as well as his USB.

Explanation: By saving his work to the school system as well as his USB, Archie would have two copies of his work, and if he lost his USB or something happened to the school system, he would still be able to retrieve his work.

2. c. Use Google docs at home and at school so she only has one version of her work.

Explanation: Using Google docs means Emma will have easy access to her work and only one version to worry about. She could also share her work with her teacher to get feedback, and can then download a final copy when she is finished.

3. b. Go through his files and delete any old or unnecessary work.

Explanation: Reuben might find he has work from previous years or image files taking up lots of space that he doesn't need and the problem can be easily fixed. If he does this and is still short on room, he should ask the technicians for more space. Using the USB should be a last option as USBs can easily be lost/damaged/corrupted and then Reuben wouldn't be able to retrieve his work at all.

End-of-section quiz (page 7)

1. The technology curriculum

Technological Practice	Technological Knowledge	The Nature of Technology
Planning for practice Brief development	Technological modelling	Characteristics of technology
Outcome development and evaluation	Technological products Technological systems	Characteristics of technological outcomes

2. Operating and application software

A	Draw a border around a table	O	Rename a file
O	Create a new folder	B	Print a Word™ document you have open
O	Reject an incorrect password on log-in	A	Change the background colour of a shape
B	Save a document for the first time	A	Create a graph
O	Create a short-cut icon to the desktop	A	Add animations to a slide show

3. Good technological practice

File management

Step One: Create new folders for my work to go in.

Step Two: Move individual files to existing folders.

Step Three: Rename some files with meaningful filenames so I know what they are.

Step Four: Delete un-used files to free up space in my directory.

4. Copyright

Option One: Acknowledge all sources.

Option Two: Gain permission.

Option Three: Use copyright-free material.

Option Four: Create original material.

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