Digital Solutions

Unit 1

Creating with Code

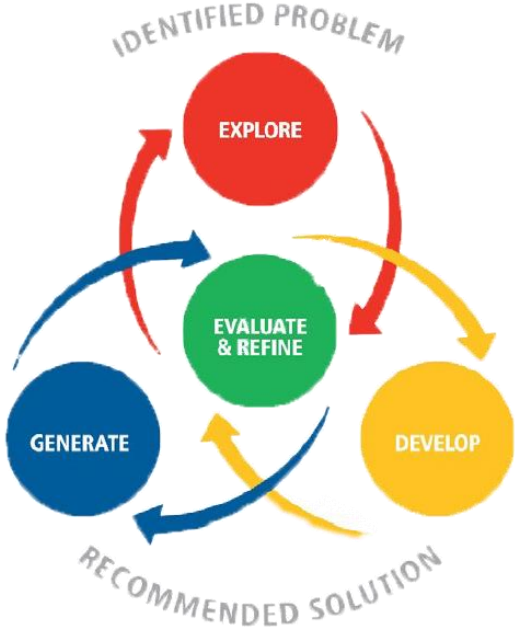
2. Understanding User Experiences and Interfaces

2.1 The Problem Solving Process
2.2 Usability Principles

LEARNING GOALS

WALT	WILF	TIB
▪ Examine the different stages of the Problem Solving Process. ▪ Investigate usability principles ▪ Research Sheneiderman's 8 golden rules of interface design	▪ Students will create a diagram of the different stages of the problem solving process. ▪ Students will list techniques used in each stage of the problem solving process. ▪ Students will create Frayer models for each of the 5 usability principles. ▪ Apply knowledge of usability principles to a school app.	▪ Technologies have been an integral part of society for as long as humans have had the desire to create solutions to improve their own and others' quality of life. ▪ Technologies have an impact on people and societies by transforming, restoring and sustaining the world in which we live.

2.1 The problem solving process



- Problem Solving Process

- Explore

- Develop

- Generate

- Evaluate

WALT

- Examine Problem Solving Process.
- Investigate usability principles.

WILF

- Create diagram of the Problem Solving Process with list of techniques.
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The Problem Solving Process

The problem-solving process in Digital Solutions is analytical and technical in nature. The process is iterative, proceeds through several phases.

In our subject your assessment is derived from the problem-solving process You will need to:

EXPLORE problems

DEVELOP ideas

GENERATE components and digital solutions

EVALUATE personal, social and economic impacts, components and digital solutions

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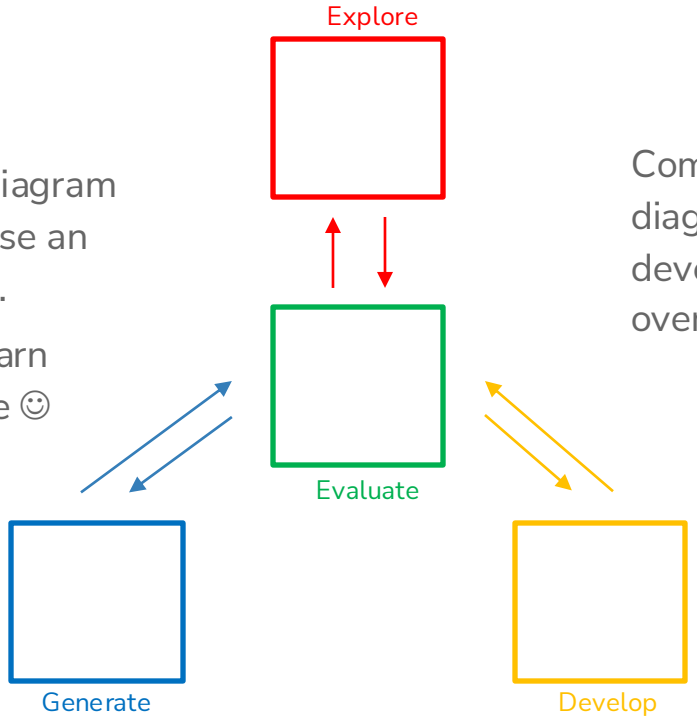
Activity 2.1

Recreate this diagram in Notability. Use an entire A4 page.

Upload to QLearn when complete ☺



Complete your diagram for the app development context over the next 8 slides

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Explore

Purpose:

Investigating needs, wants or opportunities to analyse and understand a digital problem and its relationship to existing solutions.

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Explore

Methods you will use:

Mind Map	- Typical users
	- Existing solutions and appraise effectiveness
	- Algorithms or calculations required
	- Technology required
	- Potential personal, social and economic impacts
	- Research considered (APA references)
Success Criteria	- Itemised dot-point list
	- Specific goals to meet within your project

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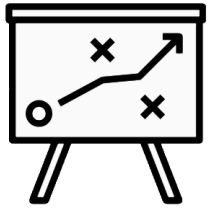

Develop

Purpose:

Creating new understanding and identifying possible solutions using design, systems, and abstraction and algorithmic computational thinking processes.

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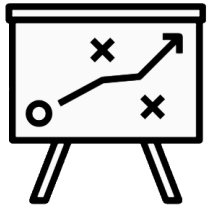

Develop

Methods you will use:

Sketches
- Selection of **key** screens
- Hand drawn and annotated
- Show links between key screens
- Remember the 5 steps from year 10?😱

Explanation of user experience
- In terms of usability principles
- Remember these from year 10 too?!😱

Algorithms
- Pseudocode needed for **key** features and functionality

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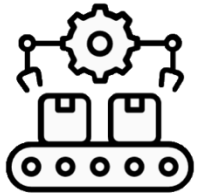

Generate

Purpose:

You will use information, software, programming tools and skills, and systems and design thinking processes to create components of an identified digital solution.

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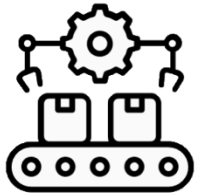

Generate

Methods you will use:

Low-fidelity Prototype

Code	- **Key** algorithms written in Swift code
Implementation	- Create app prototype in PowerPoint or Keynote

Fully Functioning App

Code	- All required Swift code
Implementation	- App to be created in the Xcode IDE

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Evaluate

Purpose:

You will use systems, design and computational thinking to appraise personal, social and economic impacts, components and digital solutions by weighing up or assessing strengths, implications and limitations against prescribed and self-determined criteria

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Evaluate

Methods you will use:

Testing	- User feedback (check usability principles)
Evaluation	- Must be based on prescribed and self-determined criteria.

2.2 Usability Principles

- Usability Principles

- Accessibility

- Effectiveness

- Safety

- Utility

- Learnability

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Usability Principles

To make applications easier to use, a range of user-centric principles need to be considered. If usability is not considered the digital solution will not be useful. These principles are:

1. Accessibility
2. Effectiveness
3. Safety
4. Utility
5. Learnability

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Accessibility

The accessibility principle is where we aim to provide an equitable digital experience for all users. It is important to be aware of the fact that many users will have physical, cognitive, auditory and visual impairments. A good app will provide a variety or configuration options to cater for these impairments where possible.

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Accessibility

Examples of what should be considered:

- Audience diversity (age, gender, cultural differences, disabilities)
- Inclusive language and terms
- Useful and relevant images
- Alternative text with images and captions
- Video transcripts (text and audio)
- User location (will it be noisy or quiet?)
- Flickering and moving content
- Keyboard access
- Use of colour

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Effectiveness

Effectiveness is a measurement of how well an interface facilitates a user in accomplishing the task for which it was intended. This is referring to the apps ability to reduce the possibility of user error and ensure tasks are successful.

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Effectiveness

Examples of what should be considered:

- Restriction of input options through the use of drop-down boxes
- Provision of simple clear instructions
- Consistent and simplistic design of the user interface

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Safety

Creating a safe environment for the user by ensuring their data is protected and that catastrophic errors don't occur

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Safety

Examples of what should be considered:

- Consent prompts
- Icons such as padlocks to indicate data is secure or exclamation marks for alerts
- Hiding data such as passwords when it is entered and visible on a display
- Warnings to prevent accidental data loss

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Utility

Does the app provide the functionality a user would expect? Are important functions and features prominent and easy to access?

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Utility

Examples of what should be considered:

- Placement of frequently accessed features and buttons
- Does it meet the minimum requirements for the app to be viable.
- Have all the necessary features been included

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Learnability

Learnability is the principle of making sure the app is easy to interact with and feels intuitive.

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Learnability

Examples of what should be considered:

- Existing solutions that users are already familiar and comfortable with.
- Icons to assist navigation
- Tutorials

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Activity 2.2 B

XMind

- Create a mind map to explore the usability of an app on your iPad (**You can use a game**).
- Identify where usability principles have been applied or where an opportunity to improve usability has been lost.

Create your mind map using Xmind. The mind map you create should have five initial branches for each of the usability principles.

When complete, export as a PNG and upload to QLearn