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Department of Education

NW4 Session 5

ALT3: Investigate and Plan



LEAVING CERTIFICATE
COMPUTER SCIENCE

Overview of the Session

Part 1

ALT3 and the LCCS specification

Part 2

Group activity 1: ALT3 Investigate

Part 3

Group activity 2: ALT3 Plan (including feedback)

By the end of this session participants will have:



worked in groups to share and evaluate potential ideas for ALT 3 (modelling & simulation)



collaborated on developing one potential idea for ALT 3 further



given and received feedback on potential ALT 3 ideas



enhanced their understanding of the Investigate and Plan stages of the Design Process with a particular focus on ALT 3

Applied Learning Task 3 (ALT3)

Modelling and simulation

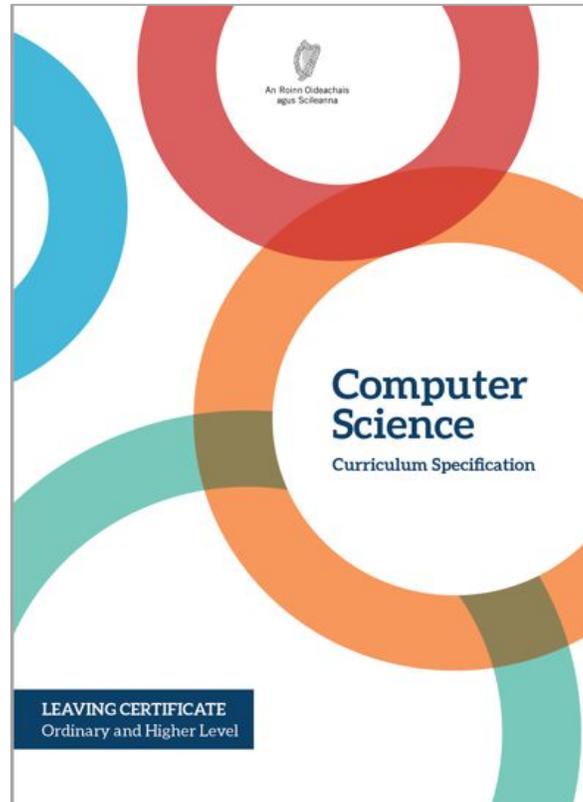
Context

Strand 1: Practices and principles	Strand 2: Core concepts	Strand 3: Computer science in practice
<ul style="list-style-type: none"> ▶ Computers and society ▶ Computational thinking ▶ Design and development 	<ul style="list-style-type: none"> ▶ Abstraction ▶ Algorithms ▶ Computer systems ▶ Data ▶ Evaluation/Testing 	<ul style="list-style-type: none"> ▶ Applied learning task 1 <ul style="list-style-type: none"> - Interactive information systems ▶ Applied learning task 2 - Analytics ▶ Applied learning task 3 <ul style="list-style-type: none"> - Modelling and simulation ▶ Applied learning task 4 <ul style="list-style-type: none"> - Embedded systems

Applied Learning Tasks (ALTs)

'Each of which results in the creation of a real or virtual computational artefact and a report.'

'Where possible, the artefacts should be beneficial to the community and society in general.'



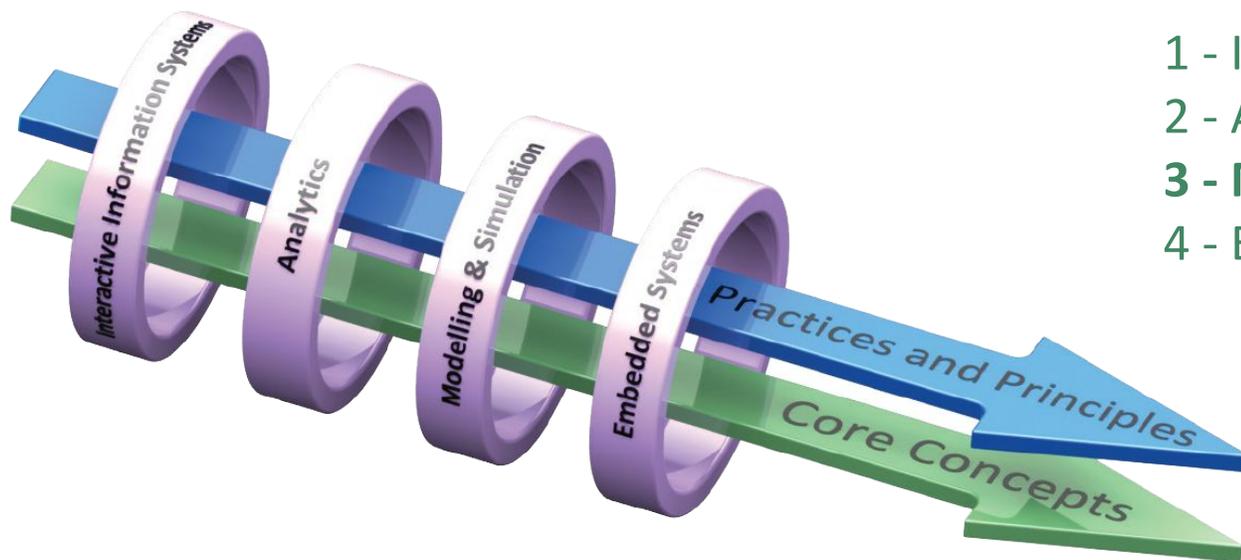
'These artefacts should relate to the students' lives and interests.'

'Examples of computational artefacts include programs, games, web pages, simulations, visualisations, digital animations, robotic systems, and apps.'

'Students work in teams to carry out four applied learning tasks over the duration of the course.'

LCCS Interwoven

The four applied learning tasks explore the four following contexts:



- 1 - Interactive information systems
- 2 - Analytics
- 3 - **Modelling and simulation**
- 4 - Embedded systems

Key point to remember: Explore and teach the LOs through the lens of ALTs.

ALT 3: Modelling and simulation

“Modelling, programming and coding require careful analysis of patterns and relationships to solve problems.”

“Students will engage with a problem that is difficult to solve analytically, but that is amenable to a solution using simulation or modelling.”

“Students will develop a computer system that simulates or models the problem. Engaging with a problem in this way will heighten students’ awareness and understanding of how algorithms can be used across a wide range of disciplines and subjects.”

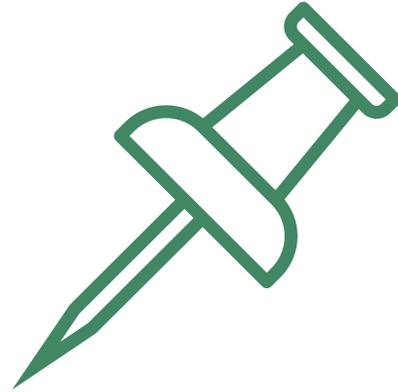
LCCS Specification: p22

ALT 3: Learning outcomes

3.8 develop a model that will allow different scenarios to be tested

3.9 analyse and interpret the outcome of simulations **both before and after modifications have been made**

3.10 explain the benefits of using agent-based modelling and how it can be used to demonstrate emergent behaviours

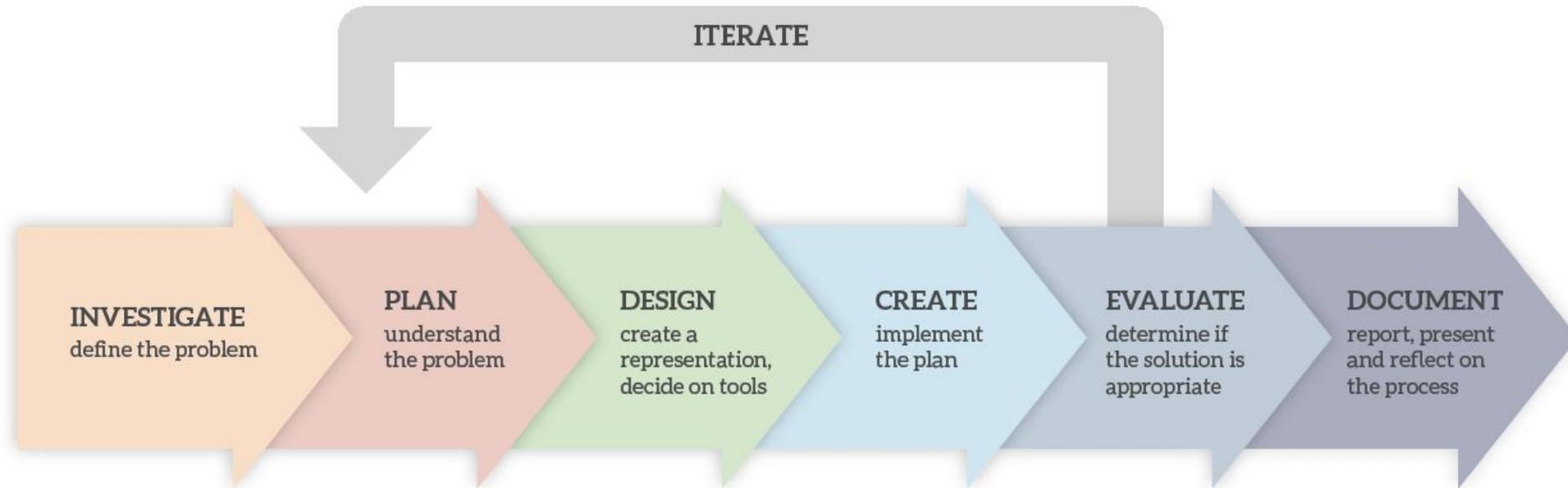


Key Message to remember:

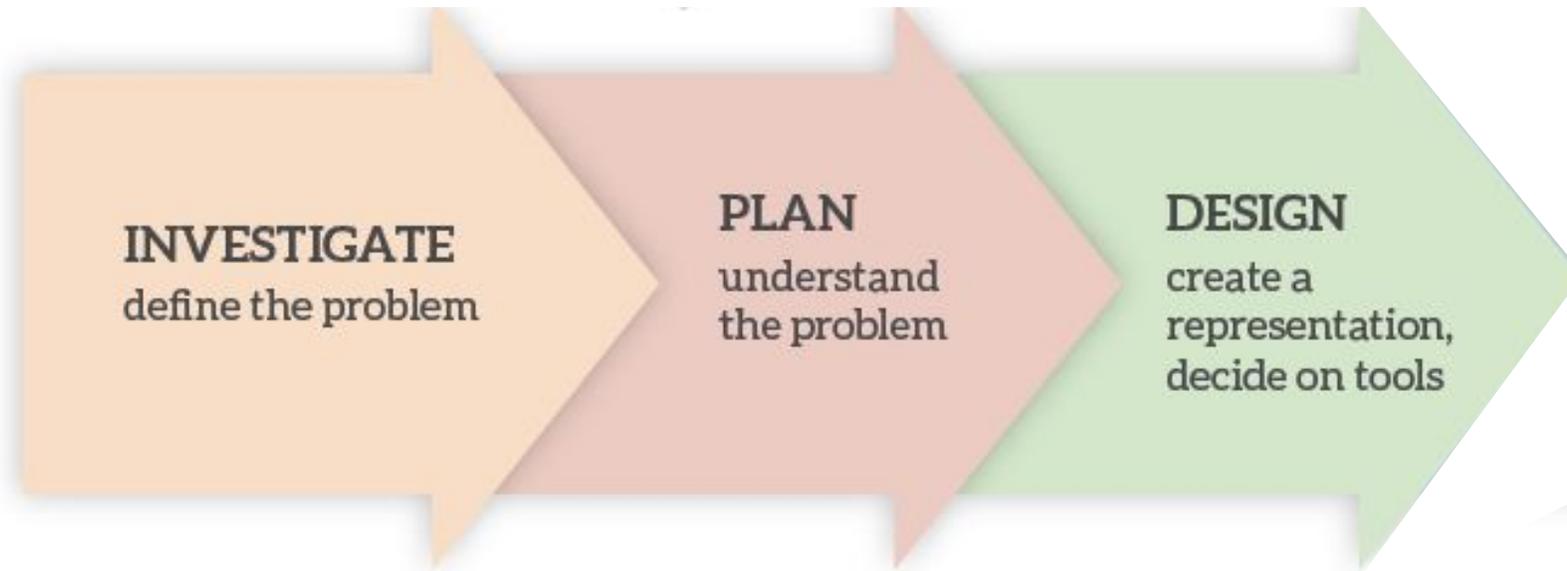
Explore and teach the LOs through the lens of ALTs.

There are numerous ways to achieve this.

The Design Process



The Design Process



Group activity #1



ALT3: Investigate

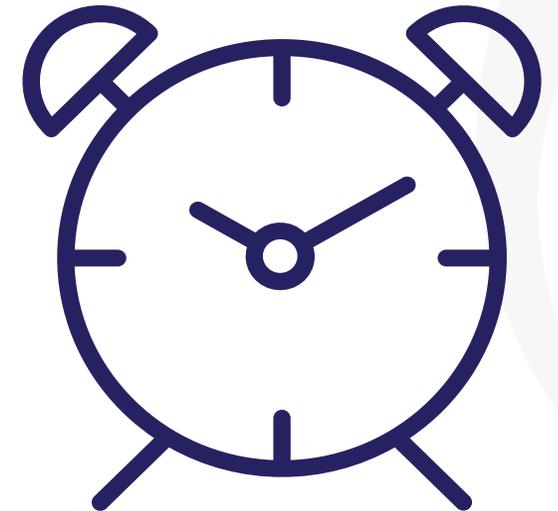
In your groups, share **potential ideas** for ALT 3.

Aim for **as many ideas** as you can.

Add your ideas to the **Google doc**.

Nominate a timekeeper, notetaker, chairperson and spokesperson.

15 mins



Group activity #2



Features/characteristics of models

“All models are wrong but some are useful” – George Box

Forecasting/predicting (future)

Messy

Real-life

Not easily solved by other means

ALT 3: Plan

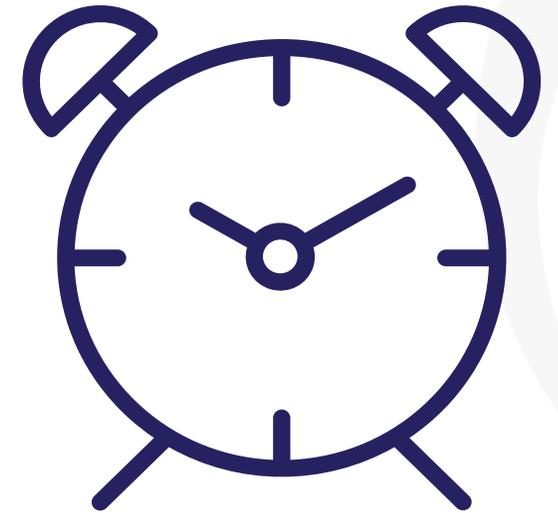
In your assigned groups, **evaluate** your potential ideas for ALT 3.

Choose **one idea** for further development.

Develop a **functional specification** for your chosen idea.

You may use the **prompt questions** to help you.

20 mins



ALT3: Plan

Choose one idea and consider the following prompts:

What will your project do/not do?

Aims? Any limitations?

Who are the end users?

What are the group roles and responsibilities?

What are the tools/materials required?

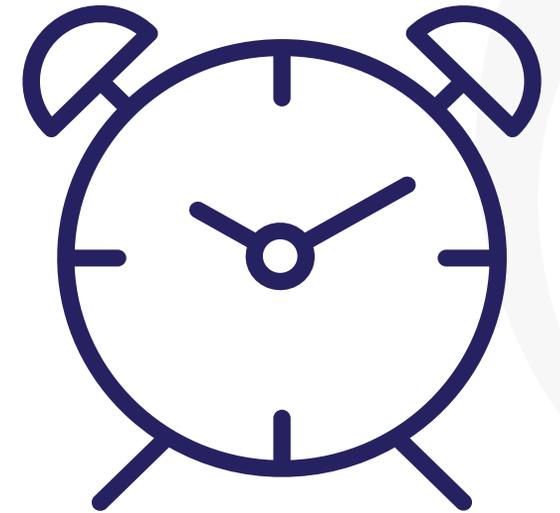
Will your project allow you to make predictions/decisions more easily?

What is new and has to be researched further?

What other LOs can be experienced through the lens of this project?

Are there any ethical issues?

20 mins



Feedback



Lunch





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