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Supporting the Professiona Learning of School Leaders and Teachers

LCCS NW2 Session 5

ALT4:
Investigate and Plan

By the end of this session…

Participants will be enabled to…

- work in groups to share and evaluate potential ideas for ALT 4 (embedded systems)
- collaborate on developing one potential idea for ALT 4 further
- give and receive feedback on potential ALT 4 ideas
- enhance their understanding of the Investigate and Plan stages of the Design Process with a particular focus on ALT 4

The Design Process

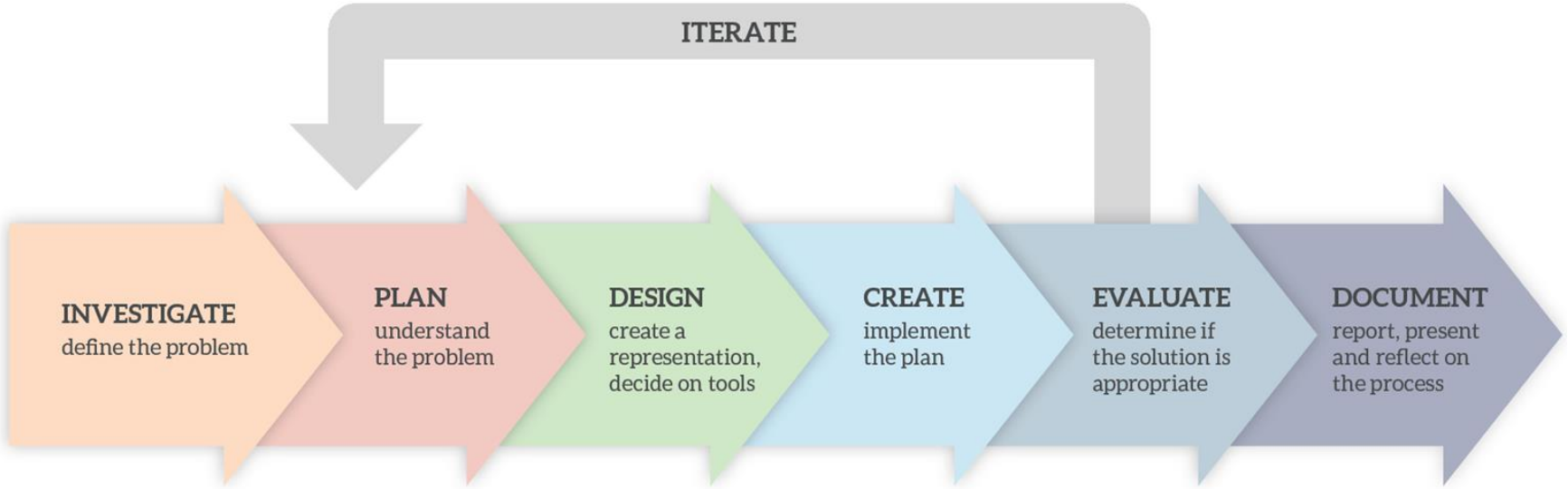

Figure 3: Overview of a design process

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Investigate

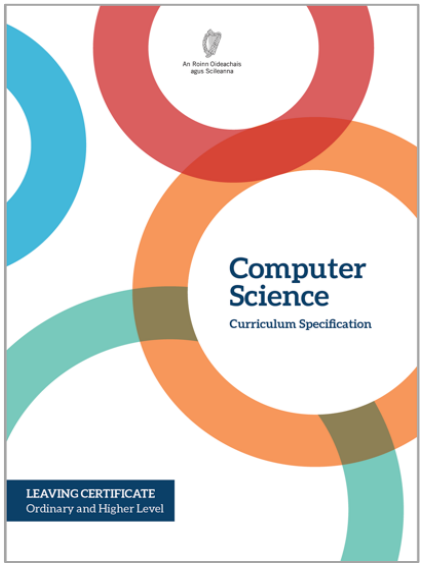
The Design Process: Investigate

ALT4 - Embedded systems

The design and application of computer hardware and software are a central part of computer science.

In this Applied Learning Task, students will implement a microprocessor system that uses sensors and controls digital inputs and outputs as part of an embedded system.

By building the component parts of a computer system, students will deepen their understanding of how computers work and how they can be embedded in our everyday environments.



LCCS Specification
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ALT4 - Learning outcomes

Students learn about:	Students should be able to:
Embedded systems	3.11 use and control digital inputs and outputs within an embedded system
Computing inputs and outputs	3.12 measure and store data returned from an analogue input
Computer systems	3.13 develop a program that utilises digital and analogue inputs
Design process	3.14 design automated applications using embedded systems

ALT4 example: Inuit children

System for Inuit children

LED built into hoods to flash when light is low

Built-in heating system with sensors in positions

ALT4: Investigate

What is an embedded system? Give examples from the world around us.

What are sensors? Digital inputs/outputs? Analogue inputs/outputs?

What are your hobbies/interests/passions? Can you think of example embedded systems that might support these?

What about other examples for users other than yourself e.g. family members, friends, school, community organisation, society?

Group activity

In your assigned groups, start brainstorming possible project ideas for students for ALT4

Aim for as many ideas as you can

Record your ideas in your booklet under *ALT 4:Investigate*

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Plan

The Design Process

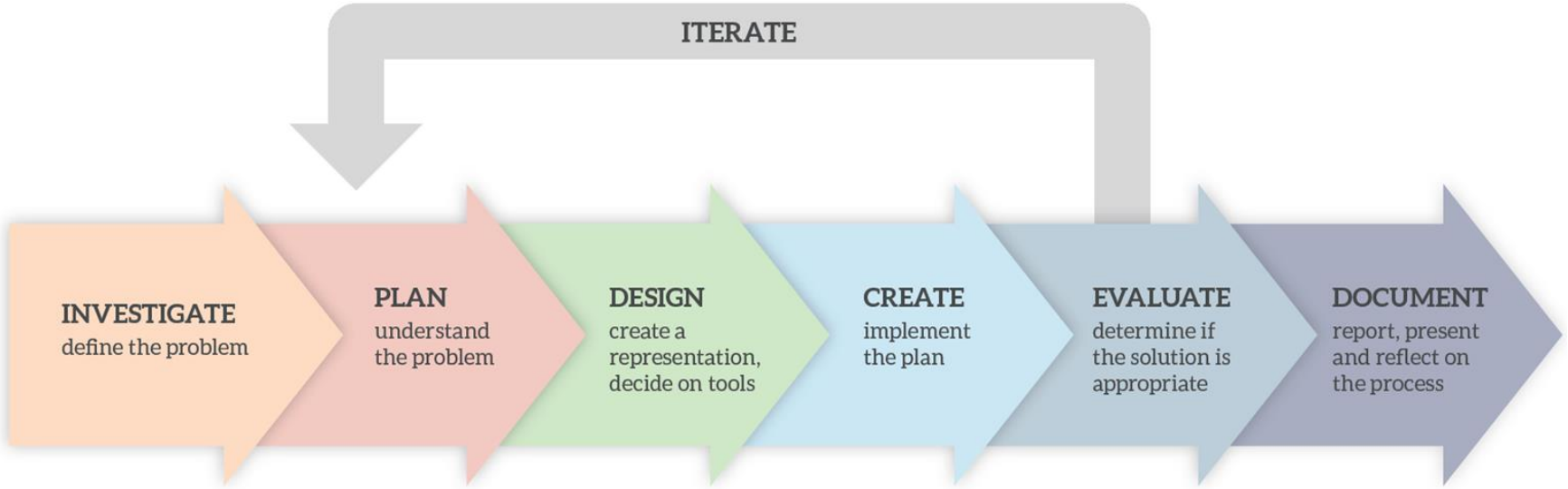

Figure 3: Overview of a design process

ALT4: Plan

In your assigned groups, **evaluate** your potential ideas for ALT 4

Choose **one idea** for further development

Dissect the idea

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

The Design Process: Plan

ALT4: Plan

Is there a broad theme or a specific topic?
Who is the audience?
What teaching & learning strategies could you use?
What does your project do?
Does your project idea cover all the LOs for this ALT?
What other LOs can be taught through the lens of this project?
What tools or materials are needed?
What are the roles in the group?
What research or upskilling do you need to do?

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Group activity - Feedback

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