

DIGITAL INNOVATION AND COMPUTATIONAL THINKING (WHAT YOU SHOULD KNOW)

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INTRODUCTION

Objectives

- Understand Computational Thinking and its processes
- Be able to use the skills of:
 - Abstraction
 - Decomposition
 - Algorithmic thinking

Computational thinking describes the processes and approaches we draw on when thinking about problems or systems in such a way that a computer can help us with these.

Abstraction is about simplifying things, identifying what is important without worrying too much about detail.

Decomposition - breaking down a large problem into smaller sub-problems.

Algorithmic Thinking – identifying the steps involved in solving a problem.

Algorithm – A set of rules to get something done.

INDUCTIVE AND DEDUCTIVE REASONING

Reasoning: Drawing of conclusions from known or assumed facts.

Inductive reasoning: uses patterns to arrive to a conclusion (conjecture).

Observations tend to be based on Inductive Arguments.

Deductive reasoning: uses facts, rules, definitions or properties to arrive at a conclusion.

Arguments based on laws, rules and accepted principles are generally use in Deductive reasoning.

Conditional Statement: logical statement with 2parts, the hypothesis and conclusion.

BOOLEAN LOGIC

Law of the excluded middle: “Some statement, S is either true or false, it can’t be anything in between”.

Premise: Concepts that are known and considered true.

Propositions: Statements in Boolean logic.

Properties of propositions

- Has only one value at a time.
- Clear meaning.
- Can be combined to form complex propositions (**Compound Proposition**).

Fundamental Operators

- **AND operator** (conjunction)
- **OR operator** (disjunction)
- **NOT operator** (negation)
- **IMPLIES** (implication)
- **IF AND ONLY IF** (bi-conditioning)

TURNING IDEAS INTO REALITY

The different Steps involved

- Identifying the problem or challenge
- Designing the solution.

BUSINESS MODEL CANVAS

