



# LEAP Online

Learning Excellence Achievement Pathway Online Tutorial



## Inductive vs. Deductive Thinking

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### Introduction

Movies, books, and television have given us numerous examples of brilliant detectives. They gather evidence and draw up hypotheses (theories) to solve high-profile crimes, using investigative powers we can't begin to understand. In truth, however, these famous characters are using critical thinking methods that most of us use every day: Inductive and Deductive reasoning.

Maybe you've heard these terms before, since they're considered to be two prevalent methods of critical thinking valuable for students. But what exactly are inductive and deductive reasoning?

In this tutorial, you'll learn what inductive and deductive reasoning are and how they differ. You'll also learn how to apply these critical thinking methods during your time at university.

## Inductive vs. Deductive Reasoning

Inductive and deductive reasoning are logical reasoning methods. Explore the sections below to learn more about these two ways of thinking.

### Inductive reasoning

You use inductive reasoning when you draw generalised conclusions based on specific examples. This strategy helps you determine information based on patterns. It's often thought of as cause-and-effect reasoning.

For example: Imagine you have conducted a survey to find out what students' favourite pizza toppings are. After collecting data from a sample of students, you notice that most participants prefer pepperoni. From this specific observation, you might generalise that "the majority of students at the University of Bolton prefer pepperoni pizza." This conclusion is based on the specific observations made during the survey.

### Deductive reasoning

Deductive reasoning involves starting with a general principle and applying it to a specific case or situation to draw a conclusion. It moves from general principles to specific instances.

For example: You concluded that most students prefer pepperoni on their pizza. You meet Bob, who is also studying on your course, for lunch at the local pizzeria. As Bob is also a student at the University of Bolton, you assume he likes pepperoni pizza.

While they are logical, inductive and deductive reasoning aren't always guaranteed to give you objectively accurate conclusions.

For example, if you believe that all dogs love to play fetch and that dogs are pets, you could use deductive reasoning to conclude that since fish are pets, they also like to play fetch. Or, if you define snow as a "white, cold substance," you could use deductive reasoning to conclude that vanilla ice cream must be snow.

Inductive and deductive reasoning are tools that must be used mindfully.

## Inductive vs. Deductive Reasoning

Can you think of some instances where you've used inductive or deductive reasoning to make a decision? Let's get practical about how to use each method of critical thinking in university.

## Inductive Reasoning



### How it works

Inductive reasoning starts with observations. You then analyse the details you've identified for patterns and trends. Using that analysis, you can form conclusions.

### In university

For their Action Research Project, a student conducts interviews with a diverse group of individuals to study their experiences with discrimination in the workplace. Through analysis, the student notices a common theme emerging from the interviews, such as unequal treatment. From these specific instances, the student may induce a broader conclusion that there are systematic issues of discrimination in certain industries or regions.

## Deductive reasoning



### How it works

Deductive reasoning starts with a general premise. As you examine a challenge, you develop a hypothesis in response. Then, you test your hypothesis by applying solutions and evaluating your results until you get the answer you're seeking.

### In university

In a law class, students study case law and legal precedents. They learn that if a higher court has ruled on a legal issue in a certain way, and their case is similar in relevant aspects, then they can deduce that the same legal principle should apply to their case.

### Summary

Inductive and deductive reasoning are just two of the many ways you can approach a challenge. Examples to examine further include abductive reasoning, analogical reasoning, and decompositional reasoning. Studying these different methods can strengthen your critical thinking skills.