Pearson

EBLANA LEARNING

AI Workbook

for IB MYP Students

Exploring AI in my World





FREE SAMPLE

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1.4 Prompt lab: Reverse engineering the black box

Thinking skills

To understand how AI works, we must speak its language. A prompt is not just a question; it is a set of parameters that guides a neural network through its data embedding space. Use the CLEAR framework to move from basic searches to technical inquiry.

Bad → Better → Best

1 Consider what differentiates these three subsequent prompts.

Bad: 'Explain how AI works.'

Why this fails: Too vague. The AI will provide a generic summary that lacks technical depth or specific **context**.

Better: 'Explain how a neural network processes data for a Grade 9 student interested in computer science. Use a list format.'

Why this is better: Identifies **audience** and **length/format**, ensuring the complexity matches the user.

Best: 'Act as a Lead Data Scientist. Explain the technical pipeline of a Large Language Model – from training data and tokens to inference. Compare the logic of supervised and unsupervised learning. Output as a structured technical guide. Mention the role of weights and biases. If I ask for a clarification, provide an analogy.'

Why this is best: Includes a **persona**, specific **logic** requirements and **refinement** instructions for maximum **accuracy**.

The CLEAR Framework

Component	Stands for	What to write	Example for inquiry task
C	Context	The background of the inquiry	'We are studying the '**Scientific and Technical Innovation**' behind AI architectures.'
L	Length / format	Visual style or word count	'Create a 3-column table comparing model types.'
E	Examples	Clarify the level of detail	'Explain '**parameters**' similar to how dials work on a radio.'
A	Audience	The target reader	'For an MYP student who understands basic **logic** but not **data** science.'
R	Refine	Post-output instruction	'Wait for my feedback, then simplify the section on **neural networks**.'

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Prompt iteration log

2 Now, it's your turn. Start with a basic prompt to understand an AI term, e.g. explain datasets. With each iteration (or refinement) add a different part of the framework to see better output. Keep iterating until your output defines terms like dataset, inference, and parameters accurately.

Try	My Prompt	AI Claim (The Output)	Refinement Idea
#1			
#2			
#3			

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Prompt quality checklist

3 Use this checklist to see if you have used the framework correctly to improve the quality of your prompts and results.

- ☐ Role / Persona specified (e.g. Computer Scientist)
- ☐ Key **vocabulary** required (e.g. weights, **biases**, tokens)
- ☐ Format / Structure defined (e.g. table, markdown, bullets)
- ☐ **Constraint** provided (e.g. 'Do not use jargon without defining it')

Factual	What specific keyword changed the results of your inquiry the most?
Conceptual	How did the quality of your prompt (input) impact the AI's **logic** (output)?
Debatable	To what extent does the 'persona' pattern influence the **bias** of the AI's explanation?

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1.5 Decoding the machine: logic and systems

Thinking skills **Systems** **Innovation** **Perspective**

The **logic** behind **systems** of **data** creates **models** that allow us to replicate human decision-making within **Scientific and Technical Innovation.**

Neural networks

1 **Use the boxes in the Frayer Model below to deconstruct the concept of neural networks. Focus on how data pipelines and mathematical logic create a functional system. Use the vocabulary bank to support your analysis.**

algorithm · dataset · training data · model · inference · parameter · token · embedding · supervised learning · bias (statistical) · accuracy · prediction

A **Definition and logic**

Describe the system's **function**: How does it process **data**?

B **Key characteristics**

What are the essential components? (layers, nodes, weights)

C **Examples (supervised)**

What are real-world applications of this technical innovation?

D **Non-examples / limitations**

When is a system NOT a **neural network**? What are the risks of **bias**?

Factual	What is the difference between **supervised** and **unsupervised learning**?
Conceptual	How does a **neural network** mimic the **relationship** between input and **inference**?
Debatable	To what extent can an AI system be truly objective if its training **data** is human-made?

Which ATL Skills did you use today? Check all that apply:

☐ Communication ☐ Social ☐ Self-Management ☐ Research ☐ Thinking

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1.6 AI *vs* human – comparative output lab

Thinking skills **Logic** **Systems** **Discerning** **Evaluating**

The **logic** of **systems** in **Scientific and Technical Innovation** relies on how **models** process **data** to generate meaning.

In this activity, we will test the logic of neural networks against human cognition. By comparing how AI processes information compared to yourself, you will identify the unique 'human edge' in technical communication.

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The shared prompt

Respond to the provocation 'Explain how AI models learn.'

Side-by-side: AI *vs* me

1 Both *you* and the AI will respond to the prompt above. Then you'll compare.

AI's response	My response
AI **models** learn through a process called training, which involves processing large **datasets** to identify patterns. In **supervised learning**, the model is provided with labeled **data**. This allows the **neural network** to adjust its internal **parameters** to minimize the difference between its **prediction** and the actual target. Through backpropagation and gradient descent, the model optimizes its weightings. Furthermore, deep learning utilizes multiple layers of neurons to extract increasingly complex features from the input. In conclusion, the model undergoes **inference** once the training phase is complete, allowing it to categorize new, unseen information based on the statistical probabilities established during the **data pipeline** phase.	

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Comparison rubric

2 Analyze the two responses using the criteria below. Give each a score out of five and explain your reasoning using evidence from the responses. Then circle the criterion where the gap between AI and human is biggest. This represents the area where your unique perspective adds the most value.

Criterion	AI (1–5)	Me (1–5)	Why? Evidence from the text
Accuracy / **Logic**			
Voice / Style			
Vocabulary Use			
Personal Insight			

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Spot the AI challenge

3 Read the three explanations of neural networks below. One is AI, one is human and one is a hybrid of a human using AI. Read them and determine which is which. Then fill out the table on the next page.

A: Think of a **neural network** like a digital brain with layers of filters. When you show it a photo of a dog, the first layer looks for simple lines, the second looks for shapes like ears and the last layer decides if it's a dog based on **probability**. It's basically just fancy math that gets better with practice.

B: Neural networks are computational **models** inspired by biological structures. They consist of interconnected nodes organized into input, hidden and output layers. Through the iterative adjustment of weights and **biases**, these systems learn to map inputs to specific outputs with high degrees of **accuracy** across varied domains.

C: A **neural network** is a complex system designed to mimic human neurons. It uses a '**data pipeline**' to feed information through layers. I think it's interesting because, while it uses **logic**, it doesn't actually 'know' what a dog is; it just recognizes the statistical patterns of pixels we call a dog.

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Sample	Guess (human / AI / hybrid)	Specific clue I noticed ...
A		
B		
C		

Hybrid workflow planner

4 **Decide which of these tasks should be done by a human, done by AI or done by a human with AI assistance (hybrid). Colour in the boxes (one colour for AI alone, one colour for both, one colour for human alone).**

A Fine-tuning grammar

B Brainstorming 20 ideas

C Writing a personal narrative

D Summarizing a 30-page research paper

E Apologizing to a friend

F Final TOK-style reflection. Add two tasks of your own:

Reflect

Skills Practised:

☐ Thinking ☐ Communication ☐ Social ☐ Self-Management ☐ Research

Select one ATL skill you used today and describe how it helped you navigate the complexity of this AI concept.

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