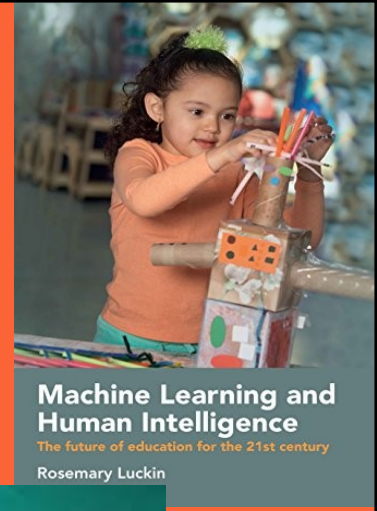
Future-Ready Humans in an AI-Ready World: Workshop



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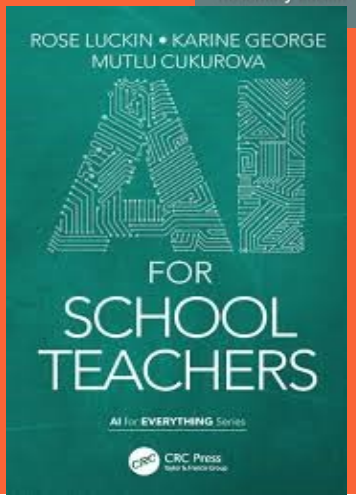
For all your AI needs: we help you realise the opportunity of AI



UCL

Prof Rose Luckin

Emeritus Professor of Learner Centred Design • IOE - Culture, Communication & Media

Rosemary (Rose) Luckin is Professor of Learner Centred Design at UCL Knowledge Lab. Rose's research involves the design and evaluation of educational technology using theories from the learning sciences and techniques from Artificial Intelligence. She has a particular interest in how A...

From The Keynote

The 3 Lenses of AI in Education and the importance of Human Intelligence

Human Intelligence Imperative

Artificial intelligence in Education

1

AI tools:

Using AI in Education to tackle some of the big educational challenges

2

Increasing Human Intelligence:

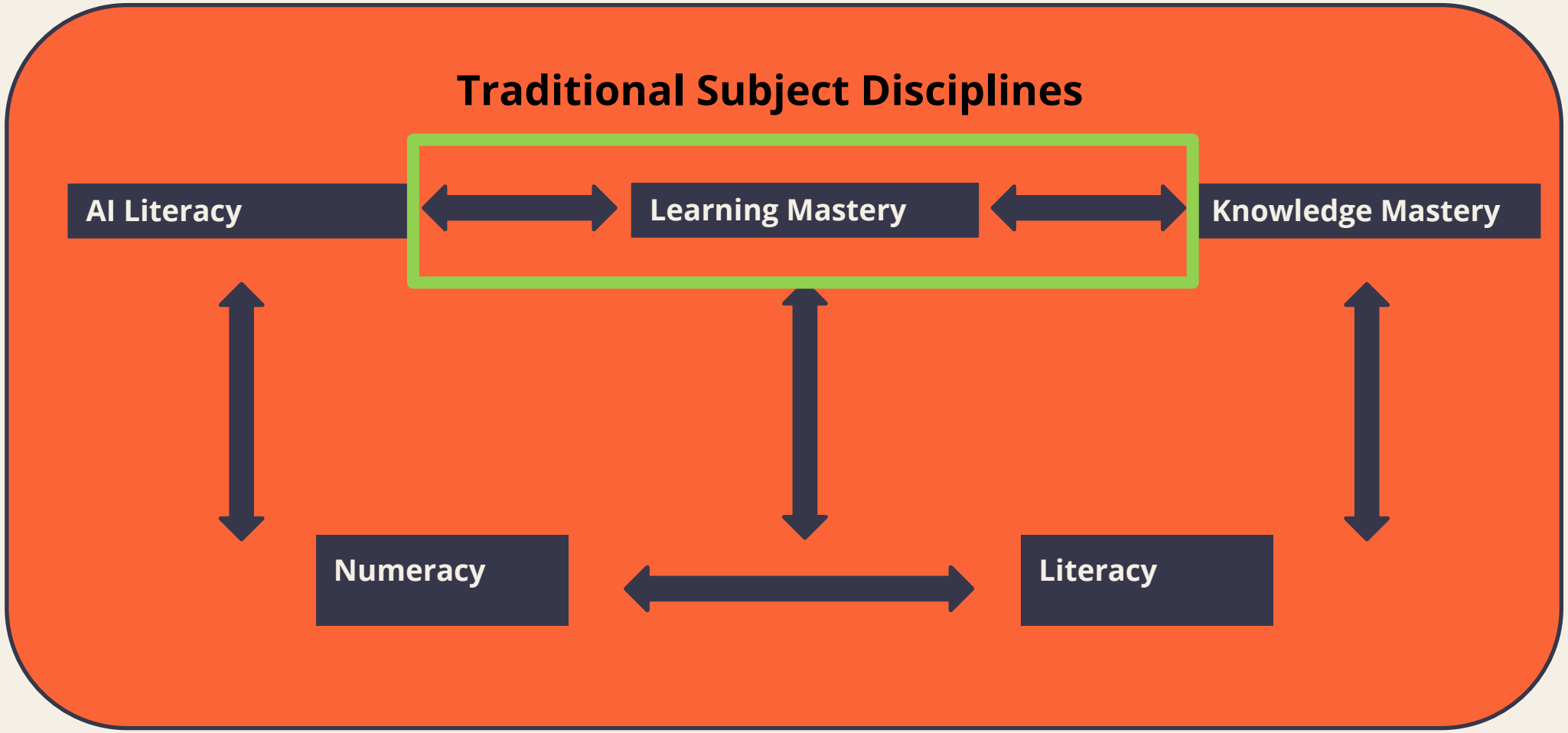
Changing Education so that we focus on human intelligence and prepare people for an AI world

3

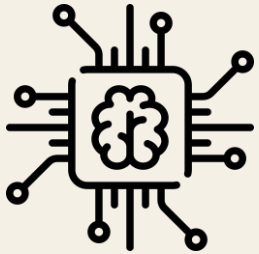
Learning about AI:

Educating People about AI so that they can use it safely and effectively

What do students need to learn?



4. Meta-cognitive intelligence

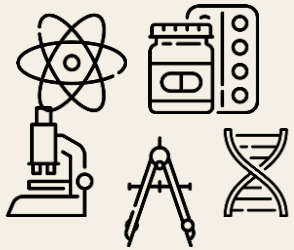


3. Social intelligence

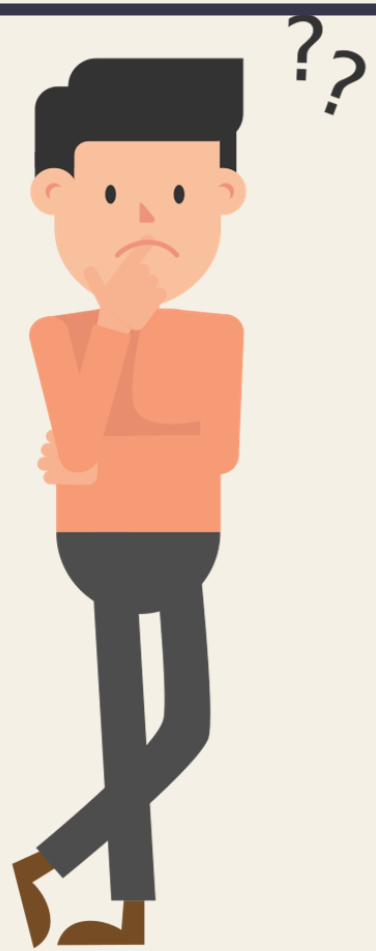
5. Meta-subjective intelligence

2. Meta-knowing intelligence

6. Meta-contextual intelligence



1.Interdisciplinary Academic intelligence



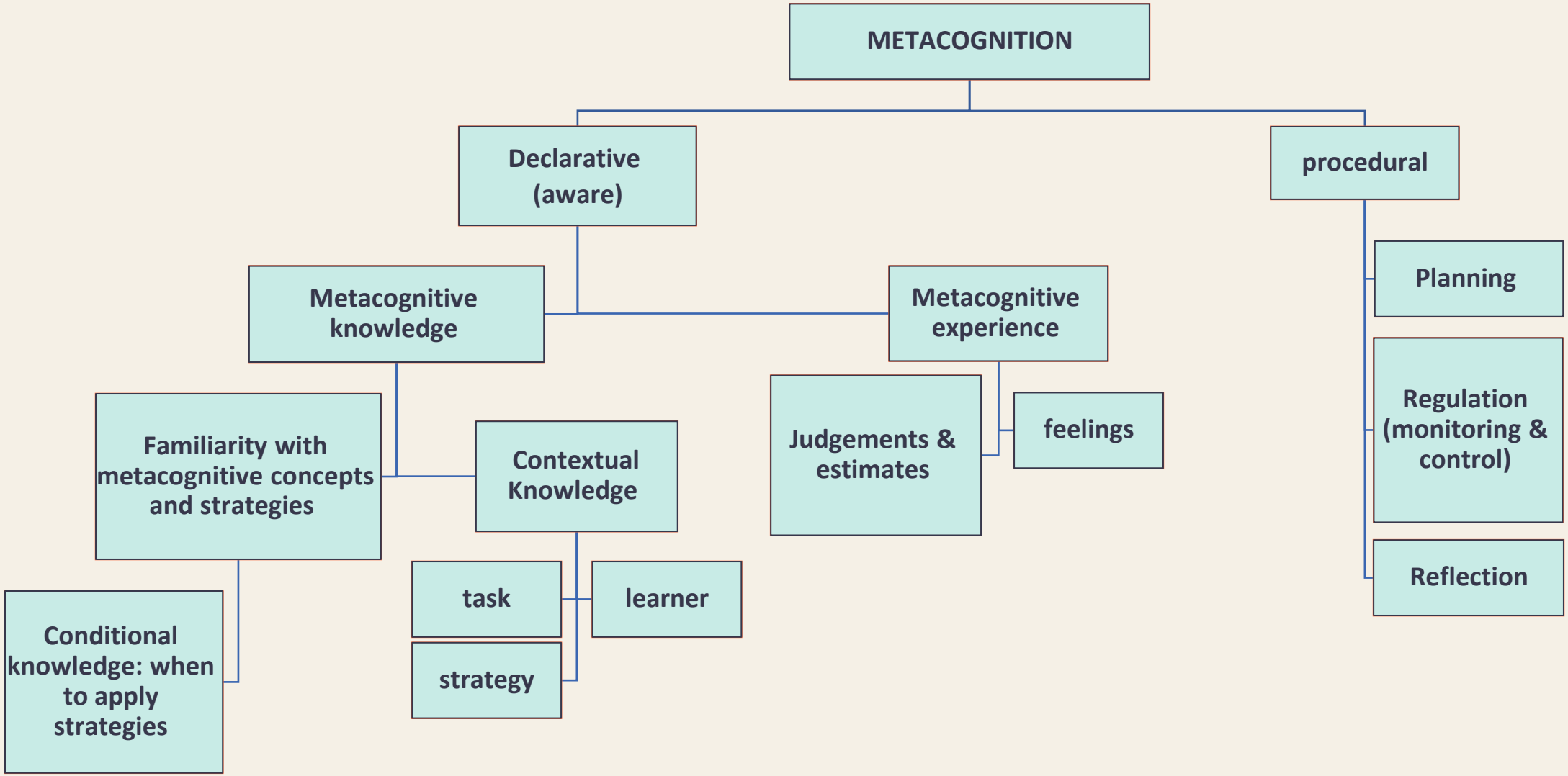
7. Perceived self-efficacy

Focus for this workshop

AI to stimulate Metacognition

What do we mean by metacognition?

Metacognition Example



What do we mean by metacognition?

- **Thinking about thinking** - knowledge concerning one's own cognitive processes and the ability to regulate them effectively.
- Metacognition involves being **aware of your learning process** while actively monitoring and controlling it to achieve desired goals.
- It's not just knowing what you know – it’s about understanding **how you learn best** and being able to plan and adapt your strategies accordingly.

Some Components of metacognition

Awareness (Declarative)

Regulation (Procedural)

Transfer

The Metacognitive Learning Cycle

Planning

Monitoring & Control

Reflection

Research shows: Metacognitive interventions are most effective when embedded within subject domains rather than taught as abstract skills.

Metacognitive Development

- **Ages 5-6:** Basic metacognitive abilities appear
- **Around age 8:** Declarative verbal and cognitive capabilities develop
- **Ages 10-11:** Evidence of transferability between domains begins to emerge
- **Adolescence:** Metacognitive control practices like self-testing and strategic time allocation become more sophisticated

Why Teach Metacognition?

Evidence-based benefits

- Educational Attainment
- Student Motivation
- Wellbeing
- Transferable Skills
- Lifelong Learning

How can we leverage AI to support metacognition?

How can we leverage AI to support metacognition?

- **Structured debate** - Teaching students to marshal evidence, even for positions they disagree with
- **Collaborative problem-solving** - Requiring justification of decisions to peers
- **Questioning techniques** - Moving students from "what" to "how do we know" and "why should we believe this"

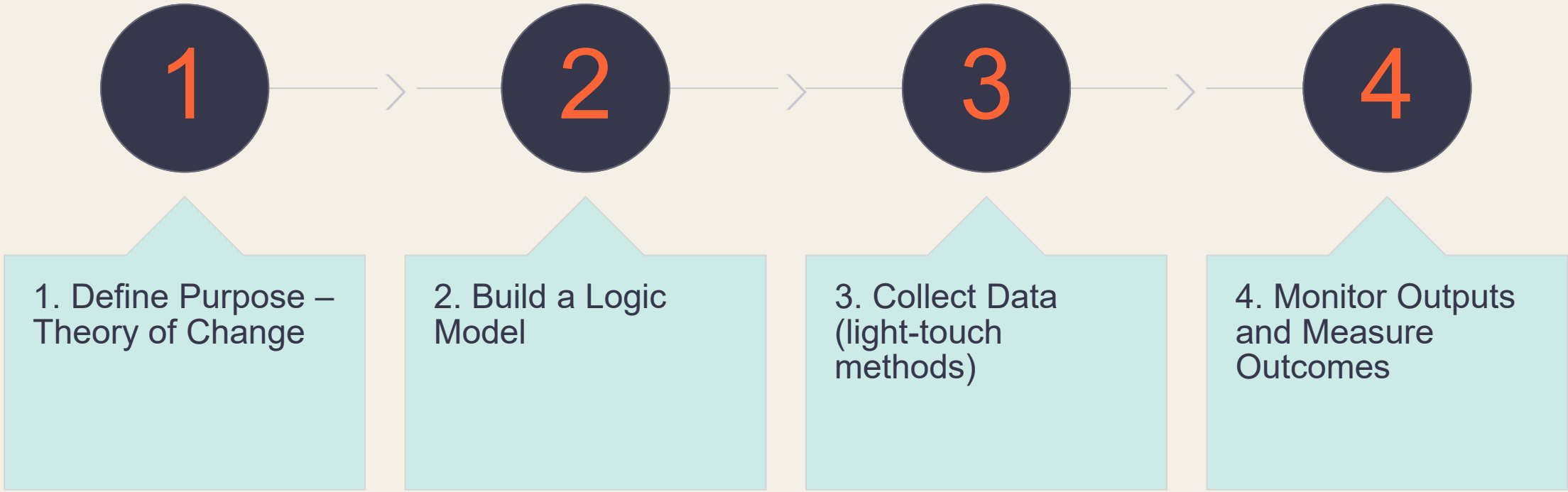
Purpose Driven AI

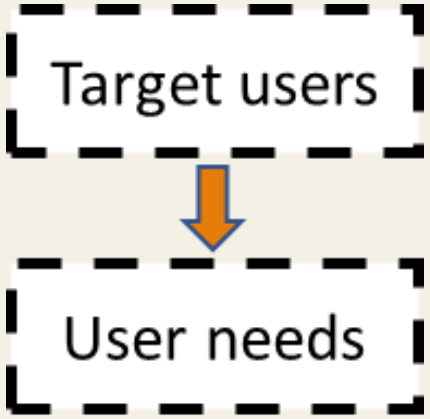
What outcome do you want to achieve?

Discussion

What is the PURPOSE you want your use of AI to achieve – what change should it enable?

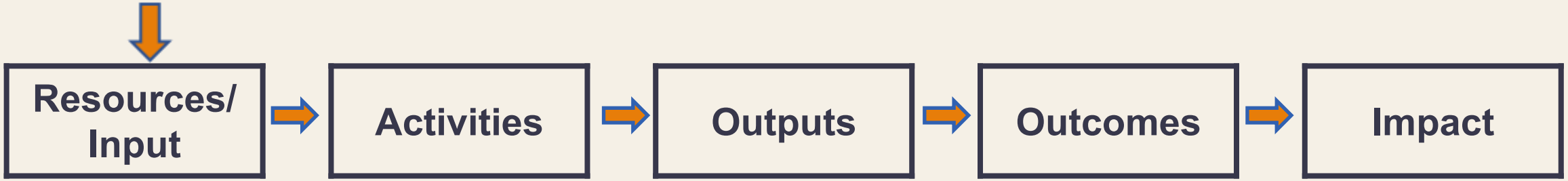
4 Steps to Build Your Own Impact Evidence





The logic model serves as the foundation for the evaluation approach, helping map the pathway from inputs to long-term impact.

By defining the potential impact and showing how specific elements will work together, in sequence, toward a final goal, the logic model offers a useful roadmap for demonstrating impact.



Your Planned AI Use Case

Your Intended Results

The Logic Model

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How can we leverage AI to support metacognition?

- **Prompts and Scaffolds:** Guiding students to apply metacognitive strategies and self-regulation
- **Progress Tracking:** Real-time feedback on performance and goal achievement
- **Learning Analytics:** Digital traces of planning, monitoring, and reflection behaviours
- **Personalised Dashboards:** Visual representations of learning progress and metacognitive knowledge
- **Adaptive Support:** Systems that adjust to individual metacognitive needs and provide targeted interventions

What do you provide to the learners and staff who will use the AI?

Describe how the students (and staff) will experience or engage with the AI

Your Planned AI Use Case

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Practical Ways to Develop Metacognition using AI

- **Goal Setting & Planning:** Teaching students to set learning objectives and plan their approach before starting tasks
- **Think-Alouds:** Having students verbalise their thinking process during problem-solving activities
- **Strategy Instruction:** Explicitly teaching multiple learning strategies and when to apply them
- **Self-Assessment & Reflection:** Regular opportunities to evaluate progress and analyse what strategies worked best

Practical Ways to Develop Metacognition using AI

- **Learning Journals:** Written reflection on learning experiences, challenges, and successful approaches
- **Peer Discussion:** Collaborative reflection on learning strategies and problem-solving approaches

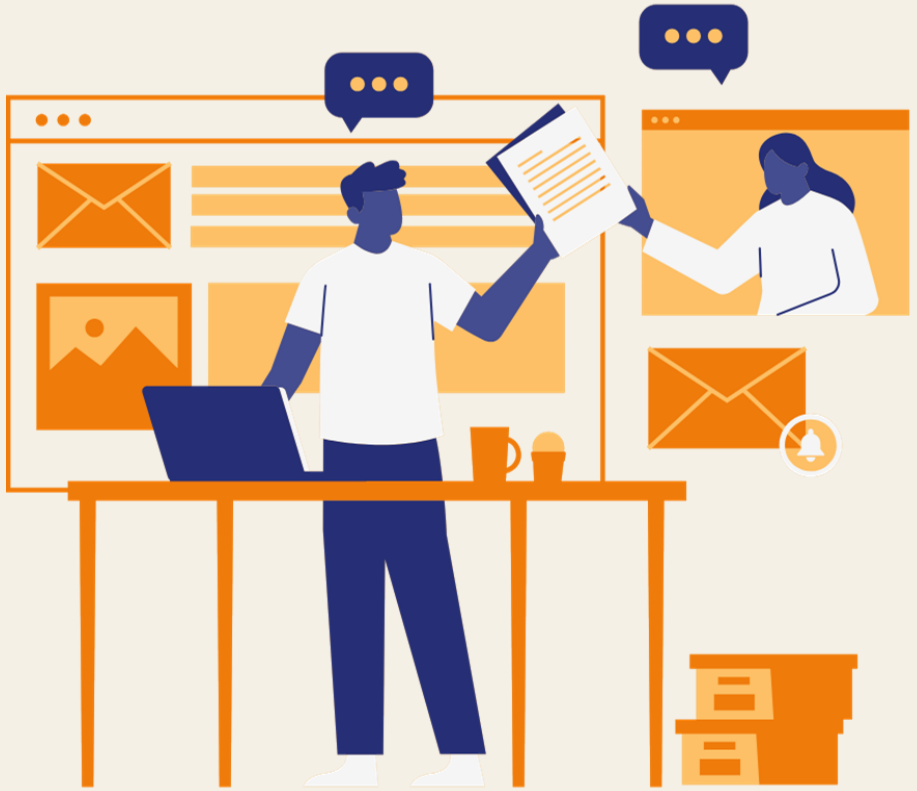
Voice Recording + AI Transcription

- Transcription or built-in voice-to-text while students solve problems aloud. Review transcripts, identify metacognitive moments.

Video Platforms + AI Curation

- Ask an LLM: "Find educational videos that teach note-taking strategies for my Year 8 class" - create personalised learning playlists.

Activities



1. Answer the question: **What activities do you want your students (and staff) to engage in to achieve your desired results?**

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Resources/ Input	Activities	Outputs
What do you provide to the learners who will use the AI?	Describe how the students (and staff) will experience or engage with the AI.	If your activities work, what do you ***think*** should happen (versus what actually happens…)?

Your Planned AI Use Case **Your Intended Results**

The Logic Model

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More general examples

Learning Analytics Platforms

- Digital behaviour tracking in existing LMS
- Progress monitoring dashboards
- Adaptive content delivery based on metacognitive indicators

Natural Language Processing

- Metacognitive language detection in writing
- Strategy mention analysis
- Confidence indicator detection

Resources/ Input	Activities	Outputs	Outcomes
What do you provide to the learners, staff who will use your AI Use case?	Describe how the students (and staff) will experience or engage with your AI Use case?	If your activities work, what do you ***think*** should happen (versus what actually happens…)?	***If*** your activities were successful, can you describe the changes in your students (and staff)?

Your Planned AI Use Case

Your Intended Results

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More general examples

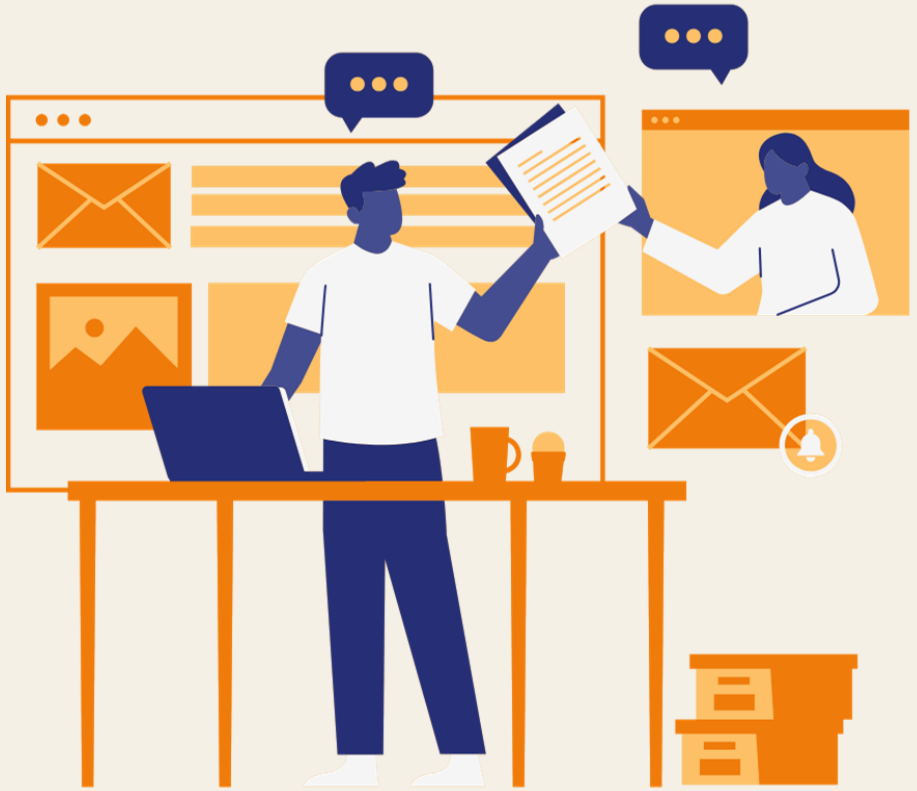
Adaptive Assessment Tools

- Confidence calibration tests
- Strategy effectiveness tracking
- Personalised question generation

Implementation Recommendations

- Step-by-step implementation timeline
- Progressive complexity approach
- Important reminder about enhancing vs. replacing human thinking

Outcomes



1. What Outcomes would **you expect** as a result of the use of **your AI Use Case** over time?

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Resources/ Input	Activities	Outputs	Outcomes	Impact(s)
What do you provide to the learners, staff who will use your AI Use case?	Describe how the students (and staff) will experience or engage with your AI Use case?	***If*** your activities work, what do you ***think*** should happen (versus what actually happens…)?	***If*** your activities were successful, can you describe the changes in your students (and staff)? ?	***If*** these benefits to students and teachers are achieved, ***then*** certain changes in organisations, communities or systems might be expected to occur.

Your Planned AI Use Case

Your Intended Results

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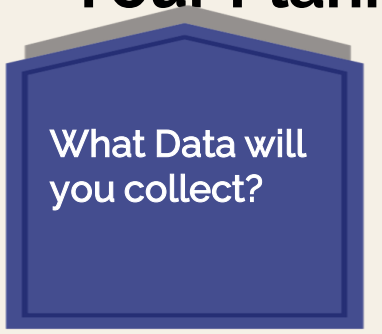
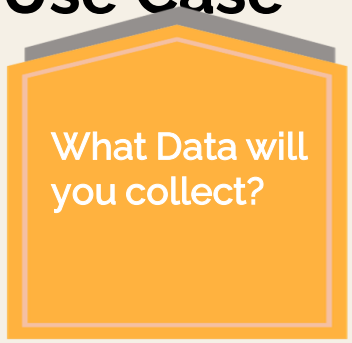
Resources/ Input → Activities → Outputs → Outcomes → Impact(s)

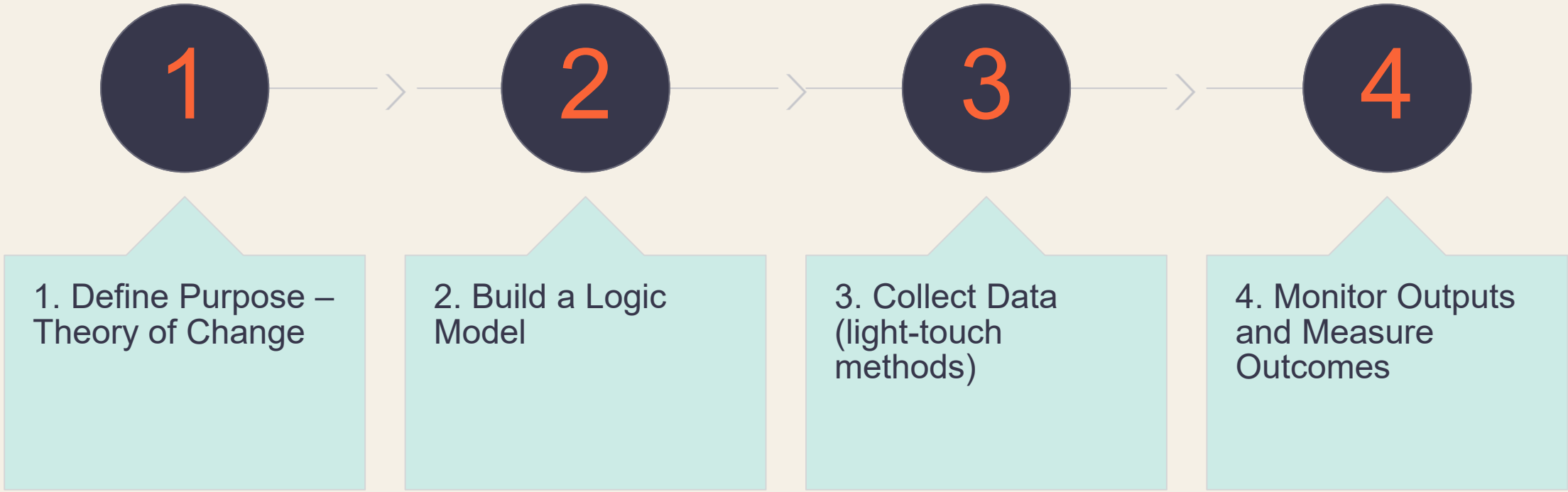
Your Planned AI Use Case





Your Intended Results

4 Steps to Build Your Own Impact Evidence

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Many Thanks

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