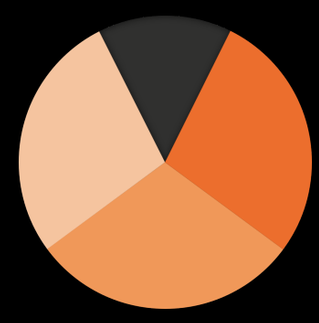
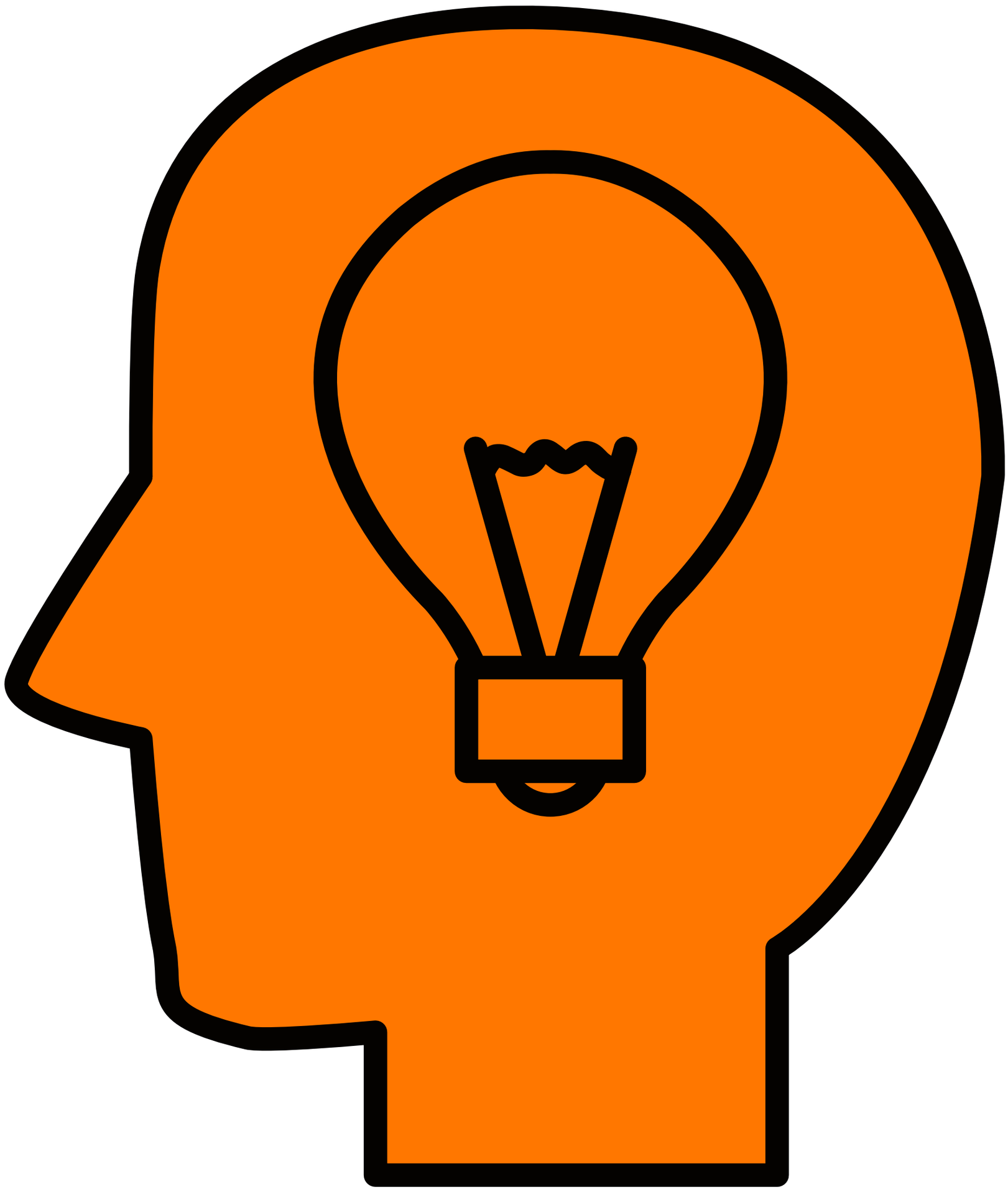
THE SCIENCE OF LEARNING PROGRAMME





EVIDENCE BASED EDUCATION

Introduction

Harness the evidence on how we learn to maximise student understanding and progress.

The Science of Learning Programme is an online course for senior and middle leaders who want to optimise teaching and learning in their school or college.

By learning and leveraging the best of what we know about how people learn, you will be guided to apply robust techniques to your own practice, and supported to implement evidence-informed professional development for colleagues.

The Programme provides an insight into key theories from cognitive neuroscience and psychology about what learning is, why we do it, and how it happens. Building on these foundations of theory, you will be guided to try out new approaches in the classroom and implement the most effective and efficient for you in your long-term practice. Over the course of the Programme, you will work towards becoming a Learning Lead.

By learning and applying, and by collaborating and reflecting with others, Learning Leads deepen their understanding of the prerequisites for:

- **learning something new;**
- **making learning meaningful; and**
- **making knowledge useful.**

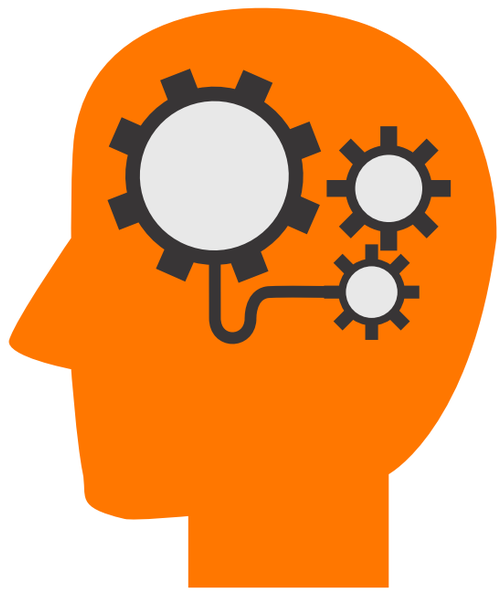
The Science of Learning Programme runs online. New knowledge you encounter will form the foundations of structured and sequenced opportunities to apply what you have learned ‘offline’, honing and optimising your own practice and your students’ learning in your context.

A minimum of two staff per school or college are required to join the Programme to enable the necessary collaboration and peer support, and to implement improvements across faculties and phases.

The Programme is structured over 30 weeks, with participants learning and developing their practice in manageable units, at their own pace.

There are four modules in The Science of Learning Programme, each broken down into units and lessons.

Module 1



Understand the Science of Learning

In Module 1, Learning Leads will:

1. Explore the scientific evidence regarding the process of learning: the essential cognitive systems, their functions and limitations, and the factors that affect them.
2. Gain a robust understanding of the basic cognitive faculties: attention, working memory, and long-term memory.
3. Learn how cognitive systems interact as a student progresses from novice to advanced stages, and build a coherent model of how students acquire knowledge, store it and retrieve it.

Units and lessons within the module:

Unit 1: Learning and the brain

- The cognitive basis for learning and memory
- Constructing the knowledge base
- Focusing on the learning process: from novice to experts

Unit 2: What are the prerequisites for learning something new?

- Focus attention and manage cognitive load
- Prior knowledge should be both available and accessible

Unit 3: How can we make learning meaningful?

- Support students' understanding - principles of teaching for effective learning
- Students-Teacher-Content interactions - planning for responsive teaching and developing metacognition

Unit 4: How can we make knowledge useful?

- The principles of effective practice
- The benefits of retrieval practice - enhancing connections
- Planning an effective schedule: the benefits of distributed practice

Module 2

Apply the science of learning in the classroom

In Module 2, Learning Leads will:

1. Develop an understanding of the benefits and limitations of specific teaching strategies and find out how each strategy can play its part in helping a student move from novice to advanced states.
2. Practise applying different strategies in your own context and develop your understanding of the adjustments you can make to maximise their effect on students' learning.
3. Gain insight into the challenges of implementation that stem from cognitive, emotional, social and contextual factors, and how you can overcome them.

In this module, three three-week practice cycles take you through a plan-implement-evaluate process that you'll return to in Module 4's implementation planning phase. In each practice cycle you will:

Plan - revisit the research literature for a specific concept introduced in Module 1 and select strategies for adopting and adapting the strategy to your own context. This will be based on the nature of the curriculum content you teach and the current level of expertise of your students.
Implement - Integrate the selected strategies into your teaching as part of a short trial.
Evaluate - reflect on the trial experience, identifying areas for refinement and ways of supporting colleagues to implement this strategy for themselves in the future.

The concepts at the heart of the three practice cycles are:

1. Focusing attention and managing cognitive load;
2. Meaning-making and checking for understanding;
3. Consolidating knowledge structures and transferring knowledge.

Module 3

Apply the science of learning to curriculum planning

In Module 3, Learning Leads will:

1. Apply concepts and strategies from the science of learning to curriculum planning in a subject or phase.
2. Learn how to adjust examples and models to fit your context and curriculum aims, and map learning activities to the stages of the cognitive development process.

Unit 1: The prerequisites for learning something new

Work with colleagues to develop implementation strategies in faculties, phases and across the whole organisation (e.g., during departmental planning - identify and break down complex knowledge structures from the curriculum into simpler components, sequencing them ready for pupils to successfully build their own knowledge structures).

Unit 2: Making learning meaningful

Work with colleagues to develop implementation strategies in faculties, phases and across the whole organisation (e.g., developing metacognition in pupils across in subjects in a particular year group).

Unit 3: Making knowledge useful

Work with colleagues to develop implementation strategies in faculties, phases and across the whole organisation (e.g., aligning assessment with the knowledge construction process over the course of a term; or interleaving similar but different curriculum content over the course of a teaching sequence/term).

Module 4

Develop practice

In Module 4, Learning Leads will:

1. Develop an implementation plan to help colleagues apply strategies from the Science of Learning Programme.
2. Prioritise issues and plan how to address them with clearly-defined roles, responsibilities and activities for all involved in students' learning.

Unit 1: Introduction to implementation planning

Explore the purpose, objective and features of implementation planning.

Unit 2: Prioritising issues and development strategies at classroom, department and whole-organisation levels

Bringing everything together from the theory of Module 1 and the practical experiences of Modules 2 and 3, Learning Leads will undertake work to develop an implementation plan for the first stage of incremental, evolutionary and long-term change.

Unit 3: Preparing for successful implementation cycles:

a. staff engagement and training
b. predicting problems and limitations and planning how to address them
c. developing logistics plan and developing success criteria

Unit 4: Creating the implementation plan

Learning Leads are guided through the process of writing their implementation plan and moving through implementation cycles.

Please note: During the final stages of the development process, the precise format of the Science of Learning Programme may change from what is outlined in this document.

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