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Supporting the Professional Learning of School Leaders and Teachers

Numeracy Across the Curriculum Webinar

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Supporting the Professional Learning of School Leaders and Teachers

Introduction

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Numeracy Support

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Administrator:
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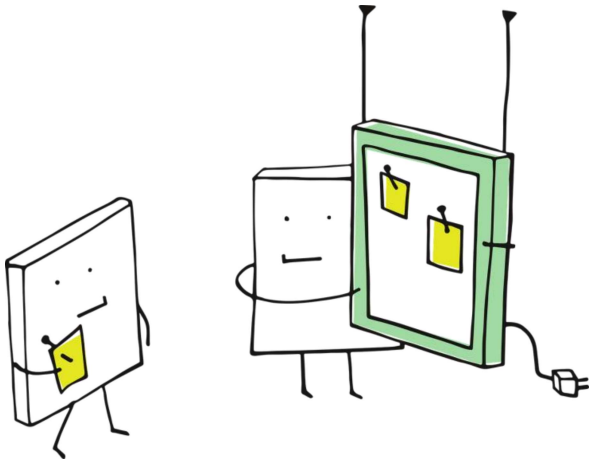
Learning Intentions

- To develop a shared understanding of Numeracy and consider the rationale for embedding it across the curriculum
- To explore a Numeracy framework to support integration across the curriculum
- To engage with an AI tool to explore numeracy knowledge, opportunities and demands within a subject context

Resources



SCAN ME

https://tinyurl.com/Numeracyacrossthecurriculum

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Supporting the Professional Learning of School Leaders and Teachers

A Renewed Focus on Numeracy

The Post Primary Context

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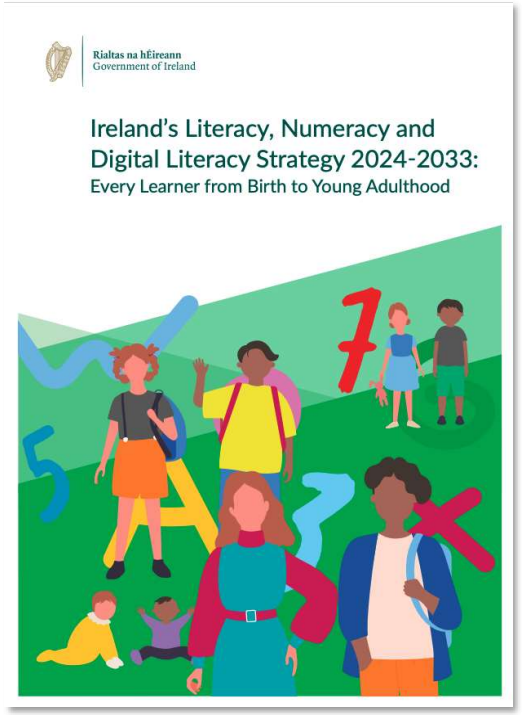
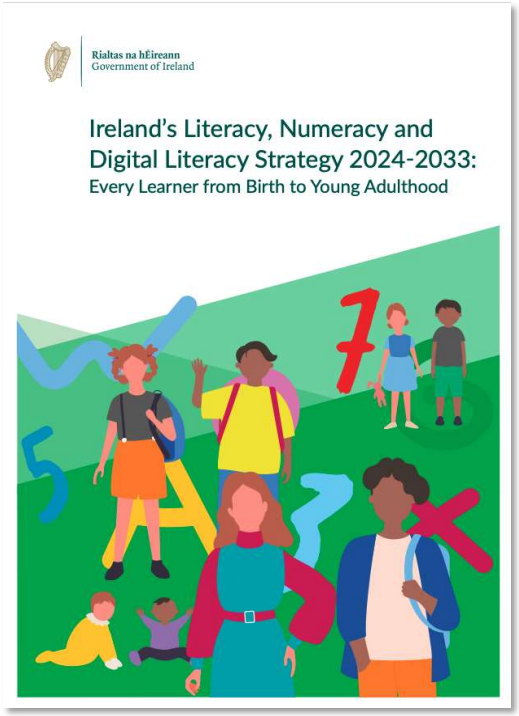
A Definition of Numeracy



"Numeracy is the ability to observe, explore and manipulate objects, and hear mathematical language. It involves ***using mathematical understanding*** *and skills* ***in a variety of contexts*** *to describe, predict and explain phenomena, recognising the role that mathematics plays in the world "*.

(Ireland's Literacy, Numeracy and Digital Literacy Strategy 2024-2033, p.29)

A Renewed Focus on Numeracy

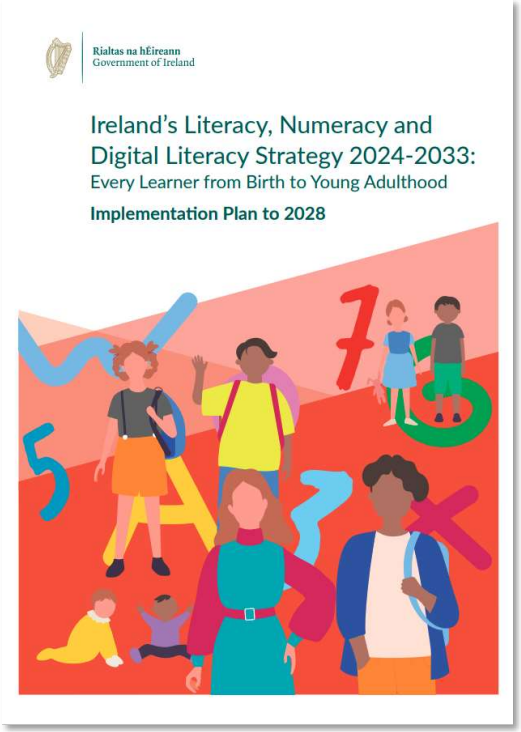


"Numeracy development and promoting positive dispositions must be prioritised from early childhood to post primary level."

"At primary and post primary levels, integrating numeracy into other subjects enables practical application and comprehensive understanding for learners."

(Ireland's Literacy, Numeracy and Digital Literacy Strategy 2024-2033, p.18)

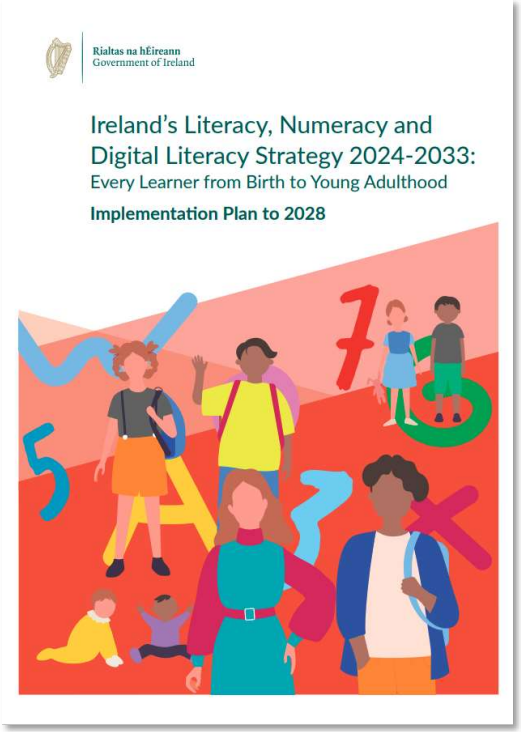
Improving the Learner Experience



Pillar 4: Improving the learner experience through curriculum pedagogy and assessment

Objective
4.4: Promote learner engagement and motivation in their literacy, numeracy and digital literacy learning journey.
Action
4.4.1 Ensure that learner experiences in literacy, numeracy and digital literacy promote experiential learning opportunities including play, problem-solving, inquiry, critical thinking and project-based learning.

Supporting Diverse Learners



Pillar 5: Supporting diverse learners to achieve their potential

Objective
5.1: Enable diverse learners to access quality learning experiences in literacy, numeracy and digital literacy.
Action
5.1.7 Continue to intensify efforts to improve the learning experience and outcomes in literacy, numeracy and digital literacy for those at risk of educational disadvantage.

Looking at Our School 2022

Domain 3: Teacher's Individual Practice

Standards	Statements of effective practice	Statements of highly effective practice
The teacher selects and uses teaching approaches appropriate to the learning intentions and to students' learning needs	Teachers purposefully develop relevant literacy and numeracy skills during lessons.	Teachers **integrate** relevant literacy and numeracy skills **into the lesson.**

Looking at Our School 2022, p. 31

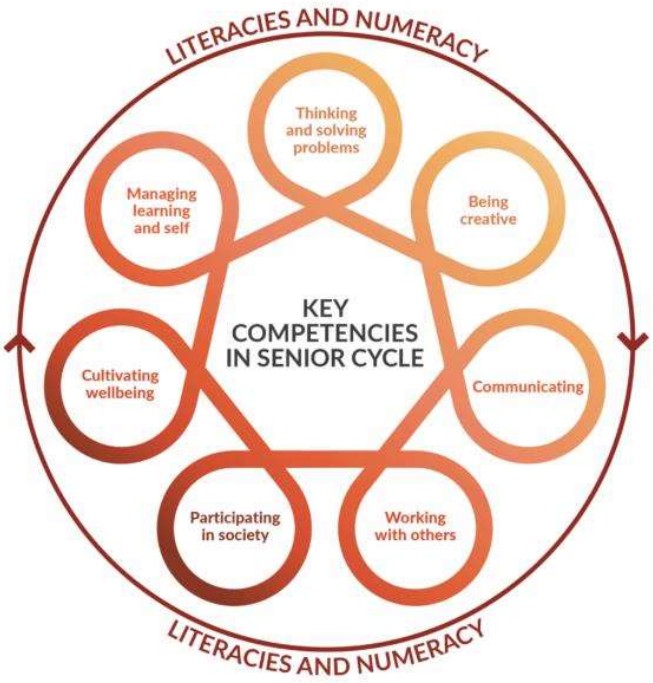
Junior Cycle Key Skill

- Expressing ideas mathematically
- Estimating, predicting and calculating
- Developing a positive disposition towards investigating, reasoning and problem-solving
- Seeing patterns, trends and relationships
- Gathering, interpreting and representing data
- Using digital technology to develop numeracy skills and understanding

Senior Cycle Skills/Competencies

Junior Cycle Key Skills

Be mindful of which key skills are embedded in the learning outcomes

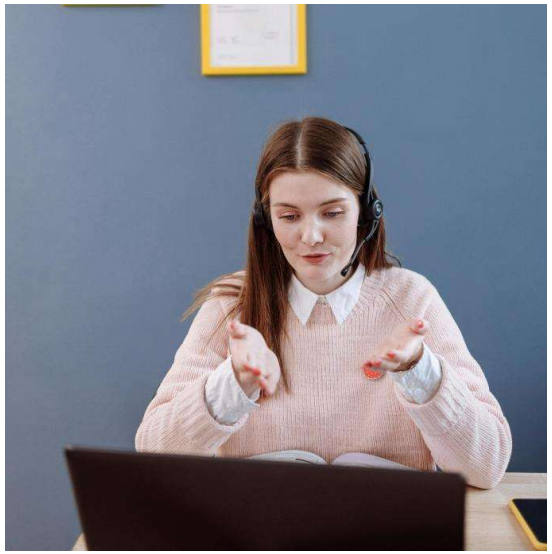


Senior Cycle Key Competencies

Discussion

Numeracy across the curriculum. What are the...

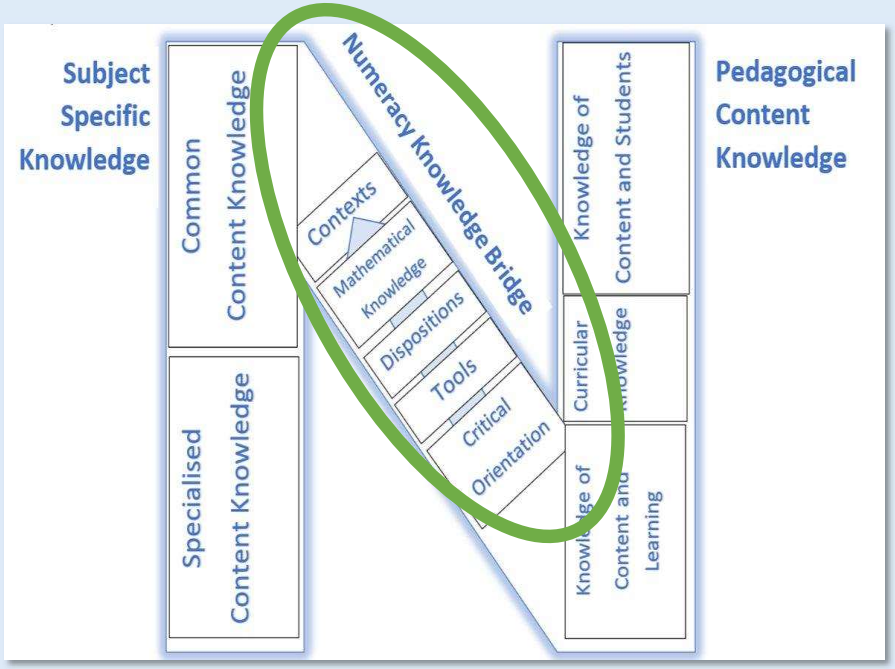
Opportunities?



Challenges?

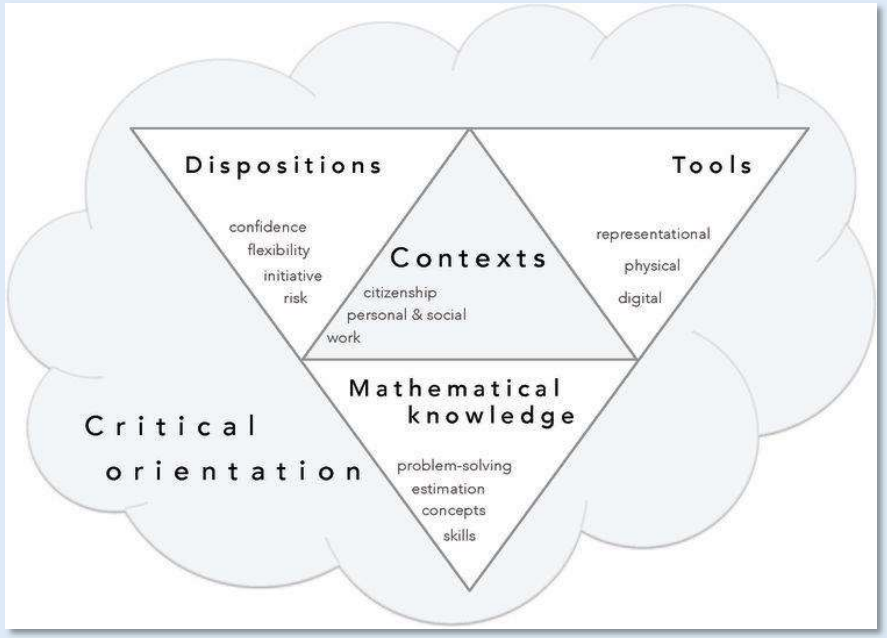
Supporting Numeracy

The N Framework



(O'Sullivan et. al, 2022)

The 21st Century Model of Numeracy



(Goos et. al, 2018)

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Supporting the Professional Learning of School Leaders and Teachers

Numeracy Across the Curriculum

Application

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History

(d) Number the following developments in GAA history from 1 to 7, beginning with the earliest and ending with the most recent.

In 1903, a ladies hurling team, known as Keatings, was set up in Dublin. They drew up rules based on hurling and called the game 'camogie'.	
The GAA was founded in 1884.	1
In 1974, the Ladies Gaelic Football Association was founded.	
By 2008, there were 515 camogie clubs and 1,100 ladies football clubs in Ireland and abroad.	
In 1932, the first all-Ireland camogie final was held.	
Today, women play a significant role in the GAA, but they are still under-represented in sponsorship deals, media attention and at high official level.	
The Camogie Association was founded in 1905.	

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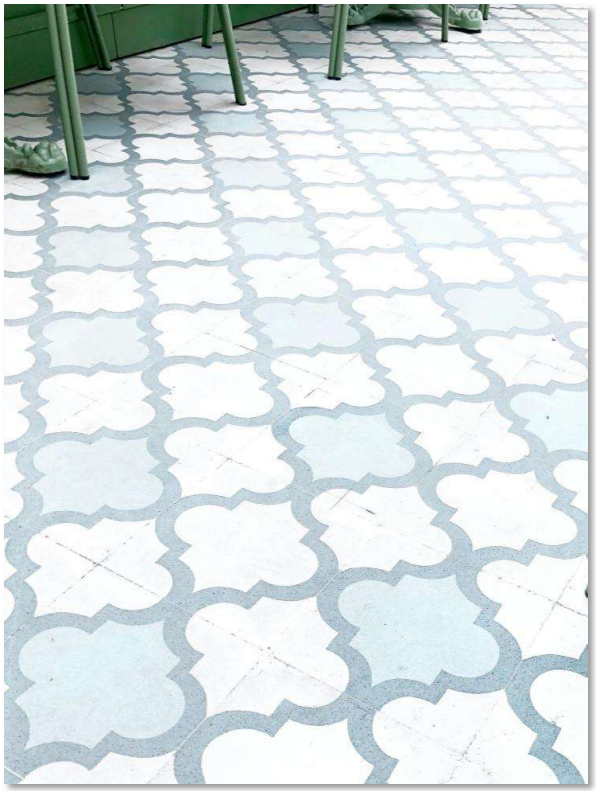
- Context
- Mathematical Knowledge
- Dispositions
- Tools
- Critical Orientation

Art



- Context
- Mathematical Knowledge
- Dispositions
- Tools
- Critical Orientation

Wood Technology

The image on the right shows a set of six egg cups.

Using a neat freehand sketch with annotations, to communicate your idea, design an attractive stand to hold and display the six egg cups on a kitchen table.

- Context
- Mathematical Knowledge
- Dispositions
- Tools
- Critical Orientation

MFL

Read the following school lunch menu and answer the questions about the students' preferences by putting a tick (✓) in the correct box.

Du 9 au 13 décembre 2019 Collège Ste-Bernadette

lundi	mardi	mercredi	jeudi	vendredi
Entrée	**Entrée**	**Entrée**	**Entrée**	**Entrée**
Salade d'avocat	Saumon fumé	Soupe aux champignons	Saucisson sec et olives	Salade verte et œuf dur
Plat principal	**Plat principal**	**Plat principal**	**Plat principal**	**Plat principal**
Poulet au curry Riz basmati	Moules-frites	Rôti de bœuf Pommes de terre vapeur	Gratin de jambon blanc	Quiche aux oignons et épinards
Dessert	**Dessert**	**Dessert**	**Dessert**	**Dessert**
Pommes, poires et oranges	Mousse au chocolat	Glace	Crème brûlée	Tarte aux amandes

(a) Laurent aime les fruits, alors il préfère

le lundi ☐ le mardi ☐ le mercredi ☐ le vendredi ☐

(b) Léa adore la viande de porc, alors elle préfère

le mardi ☐ le mercredi ☐ le jeudi ☐ le vendredi ☐

- Context
- Mathematical Knowledge
- Dispositions
- Tools
- Critical Orientation

English

Question 5 **5 marks**

Study the above info-graphic on world population carefully then complete the following sentences using only the information provided.

(a) The country with the greatest number of people living in it is: _____

(b) The birth rate per woman in the Republic of Ireland is 2.01. A country on the info-graphic with a birth rate more than three times the rate in the Republic of Ireland is:

_____

(c) A country referred to in the info-graphic, with a low average life expectancy is:

_____

(d) The info-graphic suggests that overall the population of the world is decreasing. Write either T for true or F for false in the box provided ☐

(e) India is more densely populated than the United States. Write either T for true or F for false in the box provided. ☐

- Context
- Mathematical Knowledge
- Dispositions
- Tools
- Critical Orientation

Science

State exam

Human health is affected by environmental factors such as nutrition.
The table below compares the nutritional value of two similar foods, **Food A** and **Food B**.

	Food A	Food B
Nutrient	**Mass per 80 g serving**	**Mass per 80 g serving**
Sugar	18 g	7 g
Saturated fat	7 g	3 g
Cholesterol	55 mg	33 mg
Sodium	330 mg	200 mg
Protein	12 g	20 g

(e) Identify one piece of evidence from the table which shows that the two foods were compared fairly.

(f) Which food, **A** or **B**, would be a better choice as part of a healthy diet? Use two pieces of evidence from the table to support your answer.

(g) Calculate the percentage protein in food **A**.

Calculation

- Context
- Mathematical Knowledge
- Dispositions
- Tools
- Critical Orientation

Summary

- As a teacher, we need to be aware of where the Numeracy opportunities and demands are in our subject area
- It is the responsibility of all teachers to support student's Numeracy learning, not just the role of the mathematics teacher
- Numeracy learning does not happen in every lesson, but it is essential in every subject

Over to you!

- Can you think of opportunities to embed Numeracy in your subject?
- Consider how the 5 dimensions of numeracy knowledge would apply to your example.

Using Digital Technology

Generative AI creates new original content, including text, images, audio and beyond. Large Language Models (LLMs) are a type of Generative AI that understand and generate human like text

LLMs can be used as a tool to:

- Generate ideas quickly
- Support collaboration
- Generate resources to support lessons

However always check for accuracy of output and suitability!

Prompting using the RASE Framework

R	ROLE	Give the GenAI/LLM a role and provide a context
A	ASK	Clearly define the task that you want it to perform
S	SPECIFIC	Be specific about format, length, style etc required
E	EXPERIMENT	Refine your prompt. Ask the GenAI/LLM for suggestions

ALWAYS CHECK FOR ACCURACY OF OUTPUT AND SUITABILITY.

Step	Rase Element	Description	Example
1	**R**OLE	Assign a role and provide some context	You are an experienced INSERT SUBJECT HERE teacher at post primary level in the Irish context
2	**A**SK	Clearly define the task for the LLM	Can you give examples of numeracy opportunities aligned with the Junior Cycle INSERT SUBJECT HERE specification
3	**S**PECIFIC	Specify the format and style	Format: Each example should encompass the five elements of numeracy knowledge context, mathematical knowledge, tools, positive disposition and critical orientation as outlined in the 21st Century model of Numeracy. Level of Understanding: Non applicable Style: Non applicable
4	**E**XPERIMENT Gemini	Combine the elements into a refined prompt and ask for suggestions Ask for suggestions on improving the explanation	You are an experienced INSERT SUBJECT HERE teacher at post primary in the Irish context. You are looking for detailed examples of numeracy opportunities aligned the Junior Cycle INSERT SUBJECT HERE specification. Each example should include reference to the 5 elements of numeracy knowledge: context, mathematical knowledge, tools, positive disposition, critical orientation outlined in the 21st century model of Numeracy. Can you give more examples relating to INSERT CONCEPT HERE

Over to You!

- Use the prompt template with a tool like ChatGPT, Gemini or Copilot to generate ideas for embedding Numeracy in your subject
- Do the examples make sense within your subject context? Experiment to improve its responses if necessary
- Upload a snapshot of your example(s) to chat

Reflection

Is there a platform to share numeracy opportunities and demands within your subject department in your school in the coming weeks?

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Supporting the Professional Learning of School Leaders and Teachers

Numeracy Support

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Whole School Numeracy Support Option

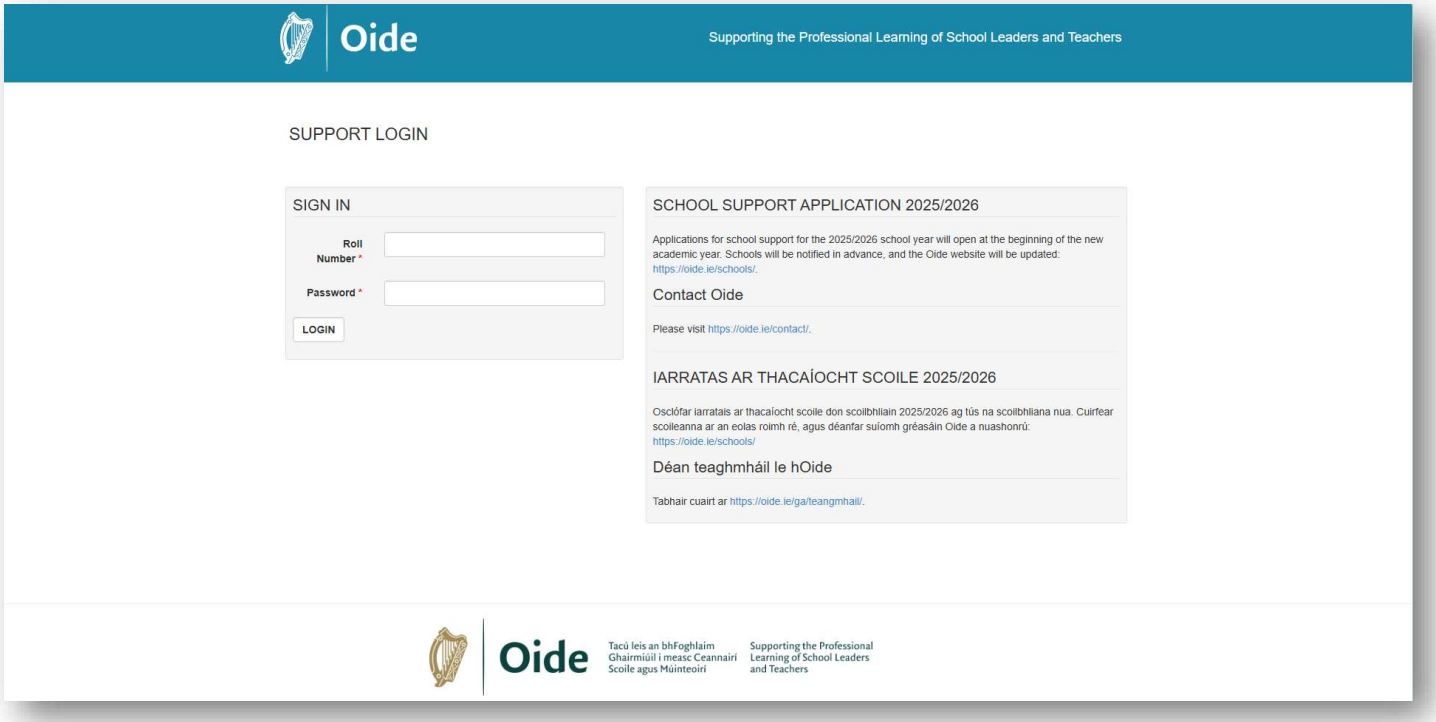
Session 1: Online (Numeracy Team)

Session 2: Online Review

Session 3: Whole Staff Meeting

Session 4: Online

Applying for Numeracy Support



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