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Supporting the Professiona Learning of School Leaders and Teachers

Leaving Cert Applied

LCA Mathematical Applications – Module 1 and 2





Introducing Oide



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NIPT

The National Induction Programme for Teachers

An tSraith Shóisearach do Mhúinteoirí





Professional Development Service for Teachers An tSeirbhís um Fhorbairt Ghairmiúil do Mhúinteoirí

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Seminar Overview

| Session 1 10:00 - 11:00 | Reflect on values and visions Module 1: Mathematics and Planning Prior Knowledge | | |
|-----------------------------------|---|---|--|
| | Tea/Coffee 11:00 - 11:15 | | |
| Session 2 11:15 - 13:00 | Module 2: Mathematics and the World Arour Introduction to Mathematical Concepts and S Transdisciplinary Links | nd Me Skills | |
| | Lunch 13:00 - 14:00 | | |
| Session 3 14:00 - 15:30 | Planning a Unit of Learning Seminar Reflection and Evaluation | Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí | Supporting the Professiona Learning of School Leaders |



Session 1

By the end of this session participants will have:



reflected on their values and visions from their LCA classroom

Investigate prior knowledge in relation to learning outcomes

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Key Messages

Courses in LCA are inherently transdisciplinary, authentic and relevant to the current and future needs of all students



The Mathematical Applications module descriptor supports the use of a wide range of inclusive, differentiated, experiential teaching and learning approaches

The Mathematical Concepts and Skills underpin the contextual learning outlined in the module descriptor and form the basis for all teaching and learning

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Mathematical Applications seeks to consolidate students' knowledge and skills through practical, problem-solvin

set in meaningful contexts.

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Supports Provided by Oide





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CPD Timeline



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Revised module descriptors



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LCA Programme Statement Addendum



This addendum modifies and supplements the LCA Programme Statement to enable students following the LCA programme to access LCE Mathematics and/or a Modern Foreign Language.

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Links to relevant material





Reflection 3, 2, 1



| 3 | Things I found out | |
|---|-----------------------|--|
| | | |
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| | | |
| | | |
| | | |
| 2 | Interesting things | |
| | • | |
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| | | |
| | | |
| 1 | Question I still have | |
| | | |
| | | |
| | | |



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Values in your classroom

What are your values for high-quality teaching, learning and assessment in your classroom?





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Vision for your classroom

How can you enact your vision for high-quality teaching, learning and assessment in your classroom?



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Context: A Changing World



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Context: Key Skills



INFORMATION COMMUNICATING PROCESSING CRITICAL THE BEING LEARNER AND PERSONALLY CREATIVE EFFECTIVE THINKING WORKING WITH OTHERS

Junior Cycle Key Skills

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Why is it important to consider prior knowledge?



Students should engage in the learning outcomes outlined in MCS 1-5 through the contextual experiences offered by Mathematics and the world around me (p. 20-21).

Concepts Through Modelling or

Concepts, <u>Then</u> Modelling??

- Although there's a chance to recap and reinforce, we need to progress the learning and don't want to just repeat what's been done before!
- Are there particular covid related considerations?
- Some prior knowledge for maths applications comes from other, less obvious school subjects and other sources.
- We want our students to build on their prior knowledge and apply it to interesting new areas.



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Prior Knowledge and MCS



| | Unit 1: Researching and Planning | Unit 2: Budgeting |
|----------------------|-------------------------------------|-------------------|
| Primary School | | |
| JC Maths | | |
| Other school work | | |
| Other | | |
| MCS (1-5) | | |

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Session Two







Session 2

By the end of this session participants will have:



Explored module 2 and the underpinning mathematical concepts and skills

Investigated transdisciplinary links among LCA subjects

Engaged in problem solving with the mathematical case study

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AIMS

This module aims to provide students opportunity to:

eir everyday lives

- consolidate and reinforce students' mathematical knowledge and skill
- make and justify decisions with mathematics
- develop confidence in using mathematics to solve problems.

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UNIT 1: CURRENT AFFAIRS

Learning outcomes

The learning in this unit is underpinned by the mathematics specified in MCS1-5 **The student will be able to:**

- 1. Create and interpret opinion polls or surveys.
- Analyse and interpret relevant information including voting data communicated in words/tables/ charts or graphs.
- 3. Investigate an issue and use mathematics to communicate findings.

UNIT 2: TRAVEL AND RECREATION

Learning outcomes

The learning in this unit is underpinned by the mathematics specified in MCS1-5. The student will be able to:

- 1. Research and plan an event to suit a particular budget.
- 2. Interpret relevant information communicated in words/tables/charts and graphs.
- 3. Prepare a written itinerary including costs and timings.
- 4. Communicate mathematics in words/equations/calculations /graphs or charts.





Introducing Mathematical Concepts and Skills



Underpinning Learning Outcomes

These outcomes "form the basis for all planning of teaching and learning in the LCA mathematical applications classroom".(Page 20)

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Planning for teaching and learning

Module 4: Mathematics and Work Unit 1:The student will be able to:

2. Create an estimate for a job, including costings such as materials, labour, taxes and profit margin Identify the Underpinning Mathematical Concepts and Skills from the Learning Outcomes

> Mathematical Concepts and Skills (MCS)

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Planning for teaching and learning

Module 3: Mathematics and Panning

Unit 1: The student will be able to:

Analyse and interpret data which impacts on personal finance presented in a variety of ways Identify the Underpinning Mathematical Concepts and Skills from the Learning Outcomes

> Mathematical Concepts and Skills (MCS)

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LCA Session 1: Tasks

"Within each module, the order of units is discretionary to facilitate integration with other subjects, tasks and current events.

Active learning methodologies, including practical work, group work and out of school activities are essential. Integration with other modules is part of the philosophy of the LCA programme. All tasks are cross-curricular in nature and afford opportunities for the integration of Mathematical Applications.

Furthermore, in the case of the Vocational Education Tasks, Mathematical Applications is a specific

requirement."

(Mathematical Applications MD, page 12)

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The Transdisciplinary Nature ^(*) ^{Oide} of Mathematical Applications

LCA Mathematical Applications is inherently a <u>transdisciplinary</u> subject, <u>authentic</u> and <u>relevant</u> to the real world.

The <u>knowledge and learning gained</u> in LCA Mathematical Applications can be enhanced and <u>utilised across the LCA programme</u> by enriching the tasks, learning and Key Assignments in other areas.

(Mathematical Application Spain Pages 1 - Page

Maths and the World Around Me: Transdisciplinary Links



• Which of these subjects are **your** students doing at the moment?

• Which subjects are particularly relevant to maths applications module 2?

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Others

Social Ed Module 1: My Community HCT Module 1: Eating Out



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Key Assignment: Mathematical Case Study



1. Finding out

- 2. Collecting, comparing and calculating
- 3. Interpretation
- 4. Making judgements
- 5. Communicating

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Problem solving in context: ⁽⁾ Oide Transdisciplinary and Authentic



MCS Underpinning Learning Outcomes

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Problem solving and the Mathematical Case Study





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Session Three







Session 3

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By the end of this session participants will have:

Explored Formative Assessment and Mathematical Applications

Planned a student-centered unit of learning for Module 2 Mathematics and World Around Me

Investigated the next steps in enacting your vision in your LCA Mathematical Applications class.

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Learning Outcomes

| Learning | | | | | |
|--|---|---|---|----------|--|
| outcomes Selected from the specification | Develop learning intentions Developed by teacher shared with students. | Organise learning activities Organise teaching, learning & assessment experiences to achieve the learning intention | Develop success criteria Agreed by teacher and students | Feedback | |

(NCCA, 2019)

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Formative Assessment and Mathematical Applications



LO: Research and plan an event to suit a particular budget.

LIs:

Read maps &(24hr) timetables Estimate/Calculate travel times Choose suitable insurance Plan & cost food and accomodation for a group

Success criteria: Fully costed and timed plan with a per-person price. Prepare a written itinerary for an overnight class trip including costs and timings

Students will be able to:

- Survey
- Research
- Calculate
- Cost

Criteria for itinerary:

- I surveyed the class on options
- I calculated distances/travel times
- I researched accommodation options
- I costed food for the group trip
- I broke down the total cost to a per-person price.



Keeping Track of the MCS



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Using ICT to Assess Prior Knowledge







Google Forms

Blooket

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Planning for all: Census at School

"The best way of showing students what success criteria are is to show them what the end product looks like" John Hattie, 2012

| 1. Are you: | 9. a) Are you a member of a sports club (outside of any school club)? | 15. Rank the following internet activities from the most used to the least used? | |
|------------------------------------|---|--|--|
| | 🗆 Yes 🔲 No | Wetching videos | |
| b) What year are you in at school? | 9. b) List any sport/physical activity Messaging/chat that you have done with a sports or Social media sit activity club (not school club) over the Listening to mu last 12 months? Online gaming Homework Looking for infu | Messaging/chatting Social media sites Listening to music Creating content Online gaming Homework Looking for information | |
| . In what county do you live? | 10. How has your level of physical activity been affected since the pandemic? | 16. a) On a scale of 0 to 100, how has the pandemic lockdown impacted your mental health? | |
| . In what country were you born? | Increased Decreased Permains the same | Not at all Very much | |





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Planning for All: Diagnostic Questions

- MCS.2. reason mathematically about problems so that they can:
- a. perform calculations on positive and negative numbers involving addition, subtraction.multiplication, division, square roots (positive numbers only), and positive whole number
- b. use the order of arithmetic operations, including the use of brackets
- c. present answers to the degree of accuracy required, for example to the nearest whole number, to the nearest thousand, to two decimal places
- d. use appropriate units and convert between them, including, but not exclusively, mm, cm, m, km, seconds, minutes, hours, days, €k (i.e. thousands), €million, degrees, etc.
- e. flexibly convert between fractions, decimals, and percentages
- f. use and understand ratio and proportion.



What is 4/5 as a percentage?







Case Study





Planning a unit of learning

- 1. Consider your assigned learning outcome(s)
- 2. Identify the Mathematical Concepts and Skills underpinning the learning outcome(s)
- 3. Identify action verbs and key skills for development
- 4. Devise an activity with a learning intention(s) and associated success criteria to achieve learning outcome(s) and activate key skills

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Consider the following reflective questions:

What new learning have I come to?

What are the implications for my teaching?

What will you do differently to maximise learning for ALL learners in your class?



ACTIVITY



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CPD Timeline



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End of Seminar

