



# Teaching, Learning and Assessment in LCA

## Mathematical Applications

Day 4

Participant Booklet

# Table of Contents

Key Messages  
PDST Supports

## **Session 1**

Introduction  
Review our CPD Journey so far  
Module 3: Mathematics and Life Skills  
Transdisciplinary Links and Prior Knowledge

## **Session 2**

Effective use of Questioning  
Unit 1: Personal Finance  
Applying MCS in Unit 2: Healthy Life Choices

## **Session 3**

Planning a Unit of Learning  
Seminar Reflection and Evaluation

## **Additional Resources**

Extracts from other LCA Module Descriptors  
References  
Links

## Key Messages

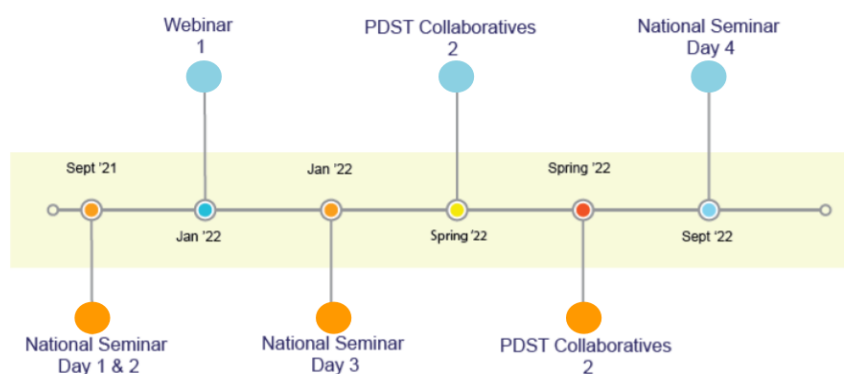
Courses in LCA are inherently transdisciplinary, authentic and relevant to the current and future needs of all students

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

Student-centred activities should be used to develop the Mathematical Concepts and Skills while engaging with the learning outcomes

LCA Mathematical Applications, ICT and English and Communications modules are strategically designed to support one another providing opportunities for rich and integrated learning experiences

## PDST Supports





Email: [lca@pdst.ie](mailto:lca@pdst.ie)  
 Website: [www.pdst.ie/lca](http://www.pdst.ie/lca)  
 Scoilnet: <https://www.scoilnet.ie/go-to-post-primary/lca/>

## Session 1: 9.30 - 11.00

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### Life Skills

What life skills might your students need in terms of Mathematical applications?

Short-Term	Medium-Term	Long-Term

How do students apply Maths skills in their own lives?

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## Transdisciplinary Links



- Which of these subjects are your students doing at the moment?
- Which subjects provide real life opportunities for students to apply Mathematical Concepts and Skills?

The topics covered may provide an opportunity to link with the tasks in Leisure and Recreation, Social Education or Vocational Education.

### Unit 1: Personal Finance

### Unit 2: Healthy Life Choices

What modules are ongoing in other LCA subjects for my students at this time and can you identify some of the **Maths content** involved?

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What tasks are taking place in this session?

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What opportunities are there for transdisciplinary work for my students?

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How can I work more collaboratively with other teachers in my school?

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## Prior Knowledge and MCS

Identify sources of prior knowledge for our students.

	<b>Unit 1: Personal Finance</b>	<b>Unit 2: Healthy Life Choices</b>
Primary School		
JC Maths		
Module 1 & 2 Maths Applications		
Other school work		
Other Life Skills		
MCS (1-5)		

What should be done if prior knowledge assessment shows major shortfalls?

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# Session 2: 11:30 - 1:00

## Effective Questioning

### Activity 1

### How are we doing?

Reflect on how you use questions in your classroom using the table below.

Traffic light your responses to the questions below using this code:

Always

Sometimes

Never



I think about the questions I am going to ask in class and plan one or two really good questions per lesson.

I ask questions that challenge and engage the students.

Before teaching a new topic I use questions to assess the students' prior knowledge and understanding.

I ask questions that force students to use existing knowledge or understanding to create new understanding.

I ask questions to encourage creative and critical thinking.

I try to avoid asking too many closed questions.

I allow time for thinking after a question is asked in class.

**Take a few minutes to share your reflections with a colleague.**

## **Authentic Problem: Personal Finance**

Can you think of 3 questions that can help your students to analyse and interpret the information?

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## **Budgeting problem**

Budget timelines are five weeks of work in July and August and four in September.

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## Comparing personal loans price of buying a car over 3 years

Borrowing Options	Pros	Cons	Annual interest rate on a loan of €2000 over 3 years	Total cost of credit (Initial sum borrowed + cost of credit)
Borrow the money from parents or friends			0%	
Take out a finance agreement to pay for the item in monthly installments (hire purchase)			9.9%	
Get a personal loan from your bank				
Authorised overdraft				
Credit Union				
Unauthorised overdraft				
Moneylender				
Use a credit card				

### Individual Teacher Reflection.

What might students find challenging about this question?

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If you were doing this problem with your students, how might you guide them?

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How would you bring this learning back to the classroom? What are the next steps?

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**Healthy Lifestyle Choices Formula to work on MCS.4.a** (evaluate expressions given the value of variables)

Formula	Example	Calculation
Estimated maximum heart rate = 220 - age	Age = 16	Estimated max. HR =
Karvonen formula: Target HR = [(max HR - resting HR) × %Intensity] + resting HR	Max HR = 204 Resting HR = 64 %Intensity = 70%	Target HR =
RM-1 muscle strength formula: RM-1 = (0.033 x RTF x load) + load  RTF=Repetitions To Fatigue	Load = RTF =	RM-1 =

See links in appendix for more information

What Effective Questions might you ask while students are working on this?

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## MCS.4 and Module 3: Mathematics and Life Skills

Ava used her fitbit to track her heart rate while she used the treadmill in the school gym for leisure and rec. Class.

Before she started on the treadmill she noted her heart rate while she was sitting : 70 b.p.m.

She walked on the treadmill at 2km/hr for 2 mins and then noted her heart rate was 90 b.p.m.

Then she walked on the treadmill at 4km/hr for 2 mins and then noted her heart rate was 110 b.p.m.

Then she walked on the treadmill at 6km/hr for 2 mins and then noted her heart rate was 130 b.p.m.

On the 1st of September Brian deposited €140 that he saved over the Summer into a savings box. He plans to deposit €60 a month for the rest of the school year to save for a Summer holiday next June.

Estimated maximum heart rate =  $220 - \text{age}$

Debbie sold her debs dress for €110 and put this in a (no fees, no interest) bank account to pay for her netflix account for as long as possible.

What Effective Questions could a teacher ask?

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What "suitable strategies" could students use to investigate the chosen linear relationship?

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Which other MCS are relevant?

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What ICT could be used and how?

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## Session 2 Reflection

How can the teaching and learning strategies used in this session support my students' learning in Module 3: Mathematics and Life skills?

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## Session 3: 2:00 - 3:30

### Planning a unit of learning

<b>Unit learning outcome(s):</b>
<b>Mathematical Concepts and Skills underpinning learning outcomes:</b>
<b>Students' Prior Knowledge</b>
<b>Transdisciplinary Links to other LCA Subjects:</b>
<b>Learning activity/activities:</b>
<b>Success Criteria:</b>
<b>Opportunities for Effective use of Questioning:</b>
<b>Case Study title:</b>
<b>Stage 1 (Finding out):</b>
<b>Stage 2 (Collecting, Comparing and Calculating):</b>
<b>Stage 3 (Interpreting):</b>
<b>Stage 4 (Making judgements):</b>
<b>Stage 5 (Communicating):</b>



## Next Steps

1. What have I learned from this seminar that could support me in enacting my response to “Now what”?
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
2. What are the next steps I will take to enact my vision for high quality teaching and learning?

# Appendix

## Extracts from other LCA Module Descriptors

All LCA module descriptors can be found here:

<https://www.curriculumonline.ie/Senior-cycle/LCA/>

Introduction to ICT: Module 3, Introduction to other software packages and applications

<https://www.curriculumonline.ie/getmedia/fac9ed7c-fab3-454e-a892-b86ebd8fc317/LCA-ICT-Introduction>

2. Introduction to other software packages and applications	1. Spreadsheets	<p>The student will be able to:</p> <ol style="list-style-type: none"><li>1. Identify suitable uses for spreadsheets.</li><li>2. Create a spreadsheet and enter numeric and character data, apply formulas while understanding their purpose to generate results, format cells and generate a chart and print it.</li><li>3. Create and understand logical formulas using standard functions.</li></ol>
	2. Introduction to the graphical presentation of data	<p>The student will be able to:</p> <ol style="list-style-type: none"><li>1. Use presentation application software to create an effective presentation and promotional materials.</li><li>2. Investigate image editing software.</li><li>3. Demonstrate an ability to edit, enhance and present a variety of information graphically.</li></ol>

## References

NCCA: Effective Questioning: [https://ncca.ie/media/1924/assessment-booklet-2\\_en.pdf](https://ncca.ie/media/1924/assessment-booklet-2_en.pdf)

## Links

[www.ncse.ie](http://www.ncse.ie)

<https://www.sciencelearn.org.nz/resources/1922-measuring-muscle-strength>

<https://www.topendsports.com/fitness/karvonen-formula.htm>

<https://www.ccpc.ie/consumers/about/financial-education/leaving-cert-applied/>

[http://www.yo-yos.ie/fileadmin/user\\_upload/PDFs/MABs\\_Pennywise\\_Diary.pdf](http://www.yo-yos.ie/fileadmin/user_upload/PDFs/MABs_Pennywise_Diary.pdf)

<http://www.yo-yos.ie/gettingconnected/spending-diary/>

<https://spunout.ie/life/money/how-to-create-a-budget>