



# Teaching, Learning and Assessment in LCA Mathematical Applications

---

Participant Booklet

Day 3

---



# Table of Contents

Key Messages  
PDST Supports

## **Session 1**

The Journey So Far  
Prior Knowledge  
Transdisciplinary Links  
Ranking, Selecting and Using Resources

## **Session 2**

Planning for All: Unit 1, Current Affairs  
Formative Assessment: Self and Peer assessment  
Planning Unit 1  
Planning for All: Using ICT to Gather Data

## **Session 3**

Planning for Unit 2: Travel and Recreation  
Next Steps

## **Additional Resources**

Extracts from other LCA Module Descriptors  
UDL  
References  
Links

# Key Messages

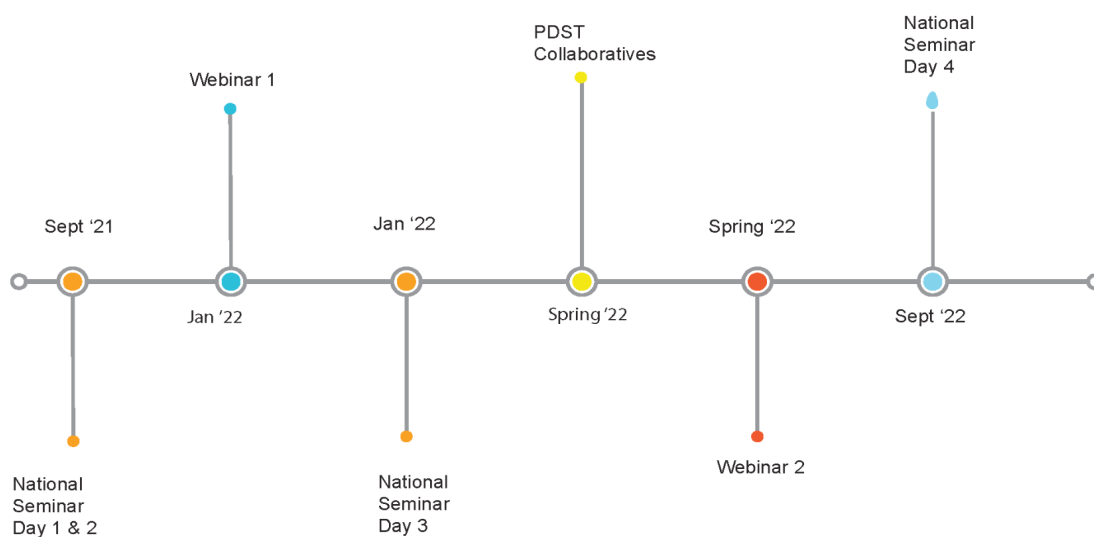
Subjects in LCA are inherently transdisciplinary, authentic and relevant to the current and future needs of all students

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

Self and peer assessment facilitated by the teacher are effective tools to improve the quality of student work while developing their key skills

# PDST Supports



Leaving Certificate Applied Subject Specification CPD

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 - 11.15

---

### Reflection on the journey So Far

What?

So What?

Now What?

# Prior Knowledge and MCS

Identify sources of prior knowledge for our students.

	<b>Unit 1: Current Affairs</b>	<b>Unit 2: Travel &amp; Recreation</b>
Primary School		
JC Maths		
Module 1 Maths Applications		
Other school work		
Other (around ME)		
MCS (1-5)		

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

---

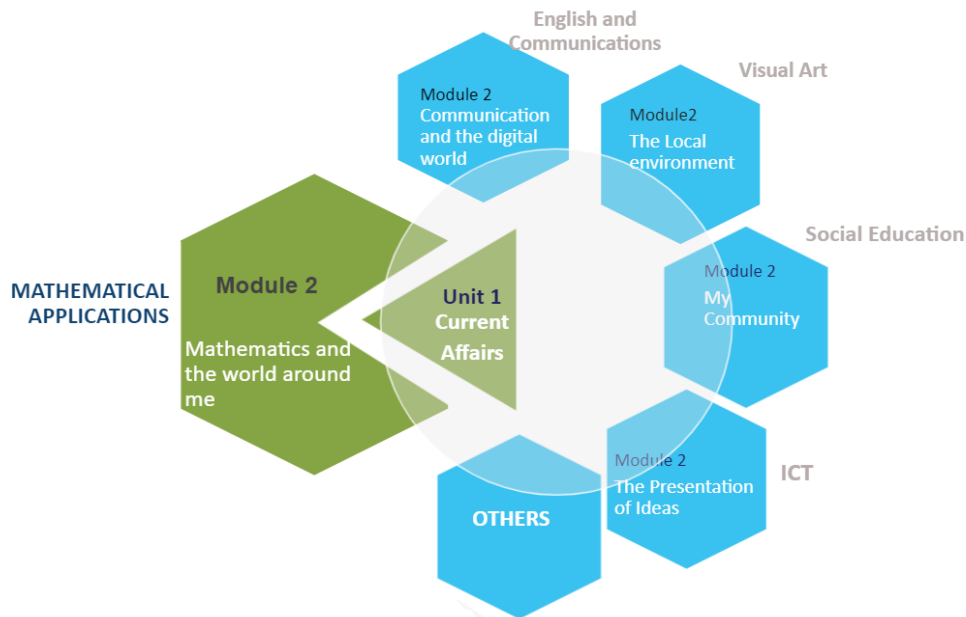
---

---

---

---

# Transdisciplinary Links



## Unit 1: Current Affairs

## Unit 2: Travel and Recreation

What modules are ongoing in other LCA subjects for my students at this time?

What tasks are taking place in this session?

What opportunities are there for transdisciplinary work for my students?

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

# Ranking, Selecting and Using Resources.

Arrange from left to right....

A.  
Analyse and interpret information about the upcoming French Presidential election

C.  
Calculate the standard deviation of student heights in the class

E.  
Plan and cost a class trip to the local mart

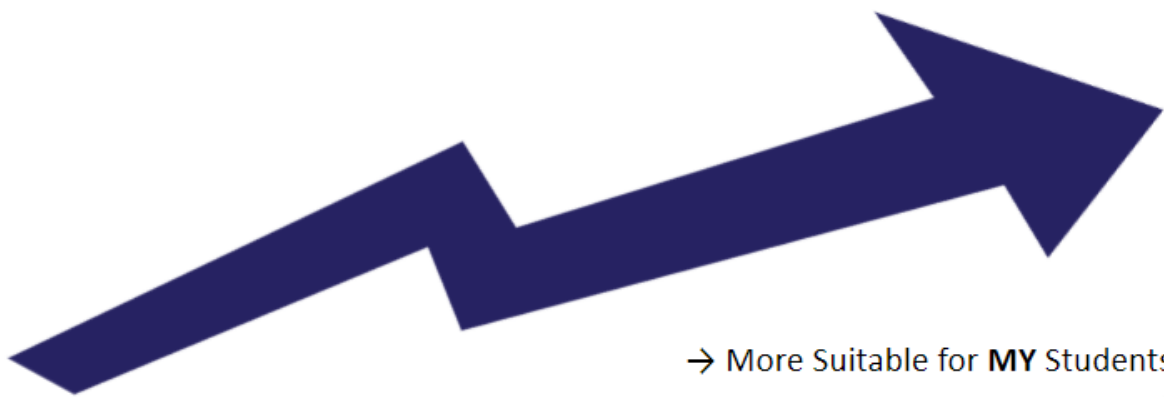
G.  
Look up the exchange rate for Euro to US dollar

B.  
Create a survey on a local (in or out of school) issue of their choosing

D.  
Use maths to compare the time spent online of first years versus fifth years

F.  
Analyse the quarterly GDP and GNP growth rates for the last 5 years

H.  
Compare yourself to someone of the same age from another European country  
[https://ec.europa.eu/eurostat/cache/infographs/youth/index\\_en.html](https://ec.europa.eu/eurostat/cache/infographs/youth/index_en.html)



→ More Suitable for **MY** Students →

Criteria we used for selecting effective student-centred activities

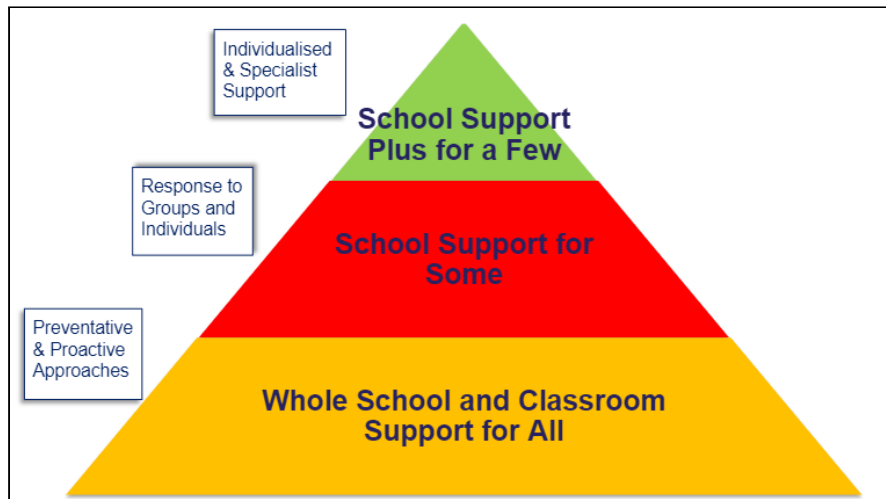
---

---

---

# Session 2: 11:30 - 1:00

## Continuum of Support



A continuum of support: Guidelines for Teachers, (NEPS, p.5)

## Planning for All: Learning Outcomes and MCS

### Module 2, Unit 1

1. Create and interpret opinion polls or surveys.

#### MCS.5

a. generate a statistical question

b. plan and implement a method to generate and/or source unbiased, representative data

Generating statistical Questions and Creating Surveys		
Engagement Issues	Engaging Current Affairs Activities	Student Issues with Survey Qs



## Peer Assessment Activity

Attempt to respond to these badly designed survey questions and consider the issues with each of the questions

1. How much money do your parents earn in a year? \_\_\_\_\_
2. We are doing a survey about people's internet use. We want to get high speed broadband in our area and check how many people are having trouble with their internet on the phone at home. We think it's harder to get good internet east of the town.  
Who is your internet provider? \_\_\_\_\_
3. Where are you from? \_\_\_\_\_
4. Tick the box for your Wifi speed at home:  
Slow                       Average                       Fast
5. Do you agree that we need fast internet access in our homes? \_\_\_\_\_

# Using Authentic Data to Engage In Learning Outcomes and MCS

- MCS.5. carry out a statistical investigation so that they can:
  - a. generate a statistical question
  - b. plan and implement a method to generate and/or source unbiased, representative data
  - c. select, draw, and interpret appropriate graphical displays of data, including bar charts, pie charts, trend graphs, and histograms (equal intervals)
  - d. select, calculate, and interpret appropriate summary statistics to describe aspects of univariate data, including measures of central tendency (mean, median, and mode) and of spread (range)
  - e. evaluate the effectiveness of different graphical displays in representing data
  - f. discuss misconceptions and misuses of statistics.

## Planning Unit 1

<b>Unit learning outcome(s):</b>
<b>Mathematical Concepts and Skills underpinning learning outcomes:</b>
<b>Prior Knowledge</b>
<b>Transdisciplinary Links to other LCA Subjects:</b>
<b>Learning activity/activities:</b>

**Resources:**

**Success Criteria**

**Opportunities for self and peer assessment**

**Case Study Problem title:**

**Stage 1:**

**Stage 2:**

**Stage 3:**

**Stage 4:**

**Stage 5:**

## Planning for All: Using ICT to Gather Data

1. How many years have you been teaching at post primary level (rounded to the nearest whole number)? \*

Your answer \_\_\_\_\_

2. What province do you live in? \*

- Connacht
- Leinster
- Munster
- Ulster

3. How much (€) did you spend on your last haircut? \*

Your answer \_\_\_\_\_

4. How much time (minutes) did you spend getting your last hair cut (not including travel and waiting)? \*

Your answer \_\_\_\_\_

5. What's the most important factor for you when choosing where to get your hair cut? \*

- Cost
- Friendliness of staff
- Skill of hairdressers
- Length of time it takes
- Location
- Other

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

---

### Planning Unit 2: Travel and Recreation

<b>Problem Title:</b>
<b>Unit learning outcome(s):</b>
<b>Mathematical Concepts and Skills underpinning learning outcomes:</b>
<b>Prior Knowledge</b>
<b>Transdisciplinary Links to other LCA Subjects:</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>
<b>Opportunities for self and peer assessment</b>



# 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 2, 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>

## English and Communications: Module 2, Communication and the digital world

<https://www.curriculumonline.ie/getmedia/a5c09aee-6a17-4251-80e0-6c21a3ef6244/LCA-English-and-Communications.pdf>

<p>Module 2: Communication and the digital world</p>	<p>Unit 1: Digital identity</p>	<p>The student will be able to:</p> <ol style="list-style-type: none"> <li>1. Examine different digital identities such as personal digital identity and those relevant to the workplace.</li> <li>2. Recognise and critically reflect on the responsibilities of employees and employers with regard to digital media in the workplace.</li> <li>3. Identify bias in digital texts.</li> <li>4. Research a topic online and employ criteria for analysing digital texts, such as authenticity, authorship, bias, objectivity, accuracy and purpose.</li> </ol>
	<p>Unit 2: Digital safety</p>	<p>The student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand how to guard information online and how to manage a social network identity.</li> <li>2. Understand and recognise cyberbullying and be able to implement strategies to address the issue.</li> </ol>
		<ol style="list-style-type: none"> <li>3. Evaluate safety risks and ethical issues when creating a digital safety charter for their class/school.</li> <li>4. Demonstrate consumer awareness when accessing goods or services online.</li> </ol>
	<p>Unit 3: Digital citizenship and global communication</p>	<p>The student will be able to:</p> <ol style="list-style-type: none"> <li>1. Recognise and reflect upon the personal and ethical responsibilities of being a digital citizen.</li> <li>2. Conduct enquiry-led research into a global digital communication platform.</li> <li>3. Understand, comprehend and analyse multi-modal texts.</li> </ol>



## Social Education

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

### Module 2: My Community, Unit 1: Introduction to Research Skills

#### LEARNING OUTCOMES

The student will be able to:

1. conduct a simple survey
2. design a questionnaire
3. conduct/record an interview
4. create charts
5. find information in a library
6. search the internet for information.

#### TEACHER GUIDELINES

- ▶ Conduct a simple survey by asking the students to interview other students in their class on the distance they travel to school etc.
- ▶ Topics for a questionnaire could include e.g. shopping habits and expenditure. Make sure that the questions are unambiguous and that the answers are easy to collate.
- ▶ The students should prepare a set of questions for an interview or use the questions they have already prepared. It is important to allow them to practise their interviewing techniques and to record the interviews on tape for review.
- ▶ Illustrate the findings from the interviews/questionnaires/surveys on pie/bar charts.
- ▶ Arrange a tour of the school/county library with the school/county librarian. Set a simple task while there e.g. *"how will I find information on my local area?"*
- ▶ Conduct a search on the Internet for information on their local area. County sites are the best source for such information.

Social Education  
Module 2: My Community, Unit 2: My Own Place

LEARNING OUTCOMES

The student will be able to:

1. locate on a map the county they live in, the county boundary and their own local area
2. locate major geographical features (rivers, mountains, lakes, rocks, etc.) on the map
3. identify different access routes e.g. road, rail, sea and air to their county/local area
4. identify towns and cities close to their local area
5. prepare a population and age profile for their local area both now and in the past
6. use a 1:1000 Ordnance Survey map.

TEACHER GUIDELINES

- ▶ A set of atlases and a wall map of Ireland would be useful.
- ▶ On a blank map ask the students to mark in a number of major geographical features in relation to their own area.
- ▶ Choose a journey from abroad or from a distant city.
- ▶ Examine census figures in the county library.
- ▶ Using a 1:1000 map (on which the school appears) ask the students to identify prominent local features e.g. the school, their own home, central business district, local road network, local churches, schools, waterworks, rivers, wooded areas, shopping centres etc.

The Ordnance Survey will produce a map with the school in the centre to this scale if requested (cost circa. £30). See also: "Beginning Map Reading" by Ian Murphy, Geographical Viewpoint 1999.

## Modern Languages

### Module 2: Travelling and Finding the Way, Unit 1: Travel and Transport

<https://www.curriculumonline.ie/getmedia/485de9d5-440c-4e54-a98d-c71f4ab4d7fc/modern-languages.pdf>

#### LEARNING OUTCOMES

Students will be able to:

1. recognise and say
  - I understand a little...
  - I can read/speak a little...
  - Could you repeat that please
2. use and understand the alphabet in their chosen language
3. spell his/her name and the names of others using their chosen language
4. ask for directions
5. understand and use vocabulary for asking directions and the names of main buildings in a town
6. ask for and buy a train ticket and follow directions to his/her train
7. understand and be able to use the 24 hour clock
8. Recognise signs
9. know about the transport system of the chosen language country
10. say how he/she gets to school.

#### TEACHER GUIDELINES

- ▶ Teach basic expressions and role-play the students understanding of these.
- ▶ Listen to the alphabet and repeat. A tape should be used for learning this. Do listening exercises where students can write down what is said on the tape.
- ▶ Role-play students asking each other to spell their names.
- ▶ Role-play asking for directions.
- ▶ Using maps and/or listening to a tape the students should give and write down basic directions e.g. straight on, right, left, 1st right, 2nd left, at the traffic lights. Make a map of a town centre and mark in the main buildings in the chosen language.
- ▶ Role-play the buying of a train ticket. Use a tape to do various train times.
- ▶ Using a speaking clock get students to write down the times they hear.

# Universal Design for Learning (UDL)

Universal Design for Learning is a framework to improve and optimise teaching and learning by removing barriers in the environment.

Universal Design for Learning provides a lens through which to consider your own practice.

Cast Symposium: UDL for Social Justice 2017



CAST (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from <http://udlguidelines.cast.org>

<https://www.ahead.ie/udl>

<https://www.cast.org/impact/universal-design-for-learning-udl>

## References

Tomlinson, (2014), The Differentiated Classroom: Responding to the Needs of All Learners, ASCD:Alexandria, VA USA

NCCA: Self and Peer assessment

[https://ncca.ie/media/1926/assessment-booklet-4\\_en.pdf](https://ncca.ie/media/1926/assessment-booklet-4_en.pdf)

## Links

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

[www.kahoot.com](http://www.kahoot.com)

<https://diagnosticquestions.com/>

[https://ec.europa.eu/eurostat/cache/infographs/youth/index\\_en.html](https://ec.europa.eu/eurostat/cache/infographs/youth/index_en.html)

[https://www.financialjustice.ie/assets/files/pdf/lca\\_maths\\_new\\_point\\_of\\_view.pdf](https://www.financialjustice.ie/assets/files/pdf/lca_maths_new_point_of_view.pdf)

<https://www.scoilnet.ie/pdst/economics/websites/>

<https://www.citizensinformation.ie/en/>

<http://epa.ie/researchandeducation/education/secondary/>

<https://www.oireachtas.ie/en/visit-and-learn/teachers-and-students/>

<https://censusatschool.ie/>

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

<http://census.cso.ie/areaprofiles/>

[www.maps.google.ie](http://www.maps.google.ie)

<http://www.worldclimate.com/>

<https://www.weather2travel.com/ireland/dungarvan/climate/>

<https://www.xe.com/currencyconverter/>

<https://www.buseireann.ie/>

<https://www.irishrail.ie/>

<https://www.ccpic.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>



**info@pdst.ie | pdst.ie**  



An Roinn Oideachais  
Department of Education



The PDST is funded by the Teacher Education Section (TES) of the Department of Education (DE) and is managed by Dublin West Education Centre