PDST
Professiona Deve opment Service for Teachers | An tSeirbhís um Fhorbairt Ghairmiúi do Mhúinteoirí

An Roinn Oideachais
Department of Education

Mathematical Applications
Day 5

Overview of the Seminar

Session 1	Introduction Review our CPD journey so far Module 4: Mathematics and Work Prior knowledge and real life documents Transdisciplinary links
Tea/Coffee Break	
Session 2	Module 4: Engaging with MCS's and learning outcomes Peer Feedback
Lunch	
Session 3	Planning for the year Planning a unit of learning Seminar reflection and evaluation

Key Messages

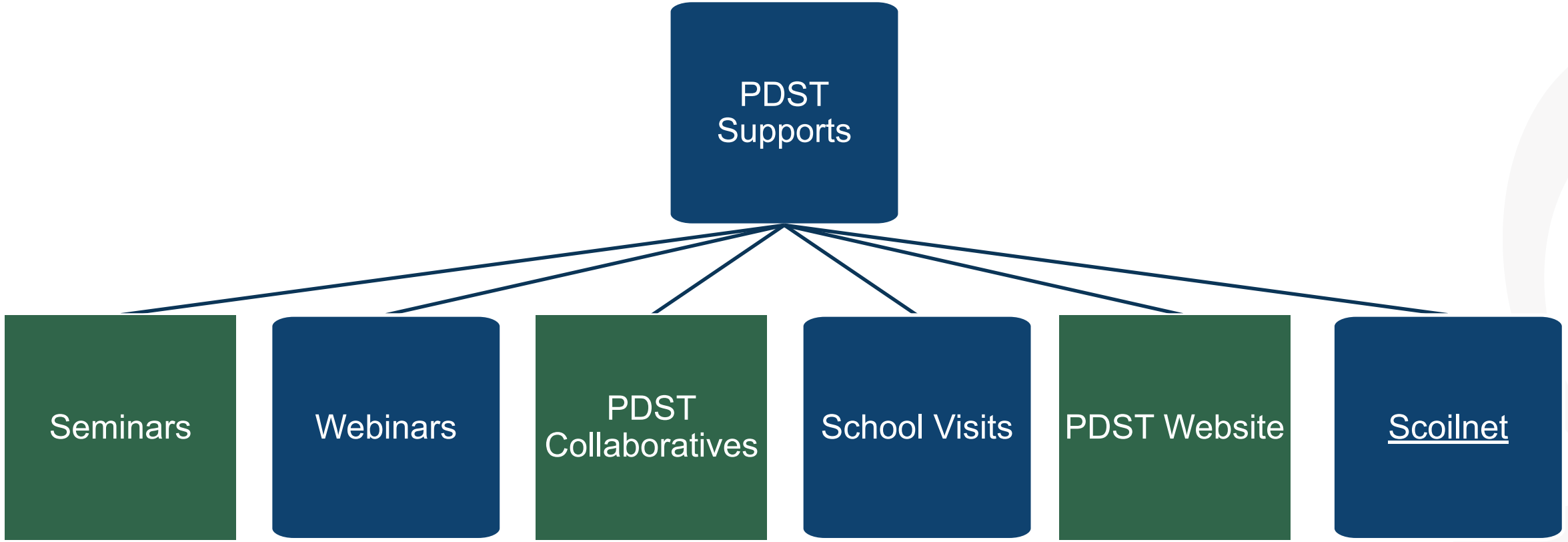
Courses in LCA are inherently transdisciplinary, authentic and relevant to the current and future needs of all students

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

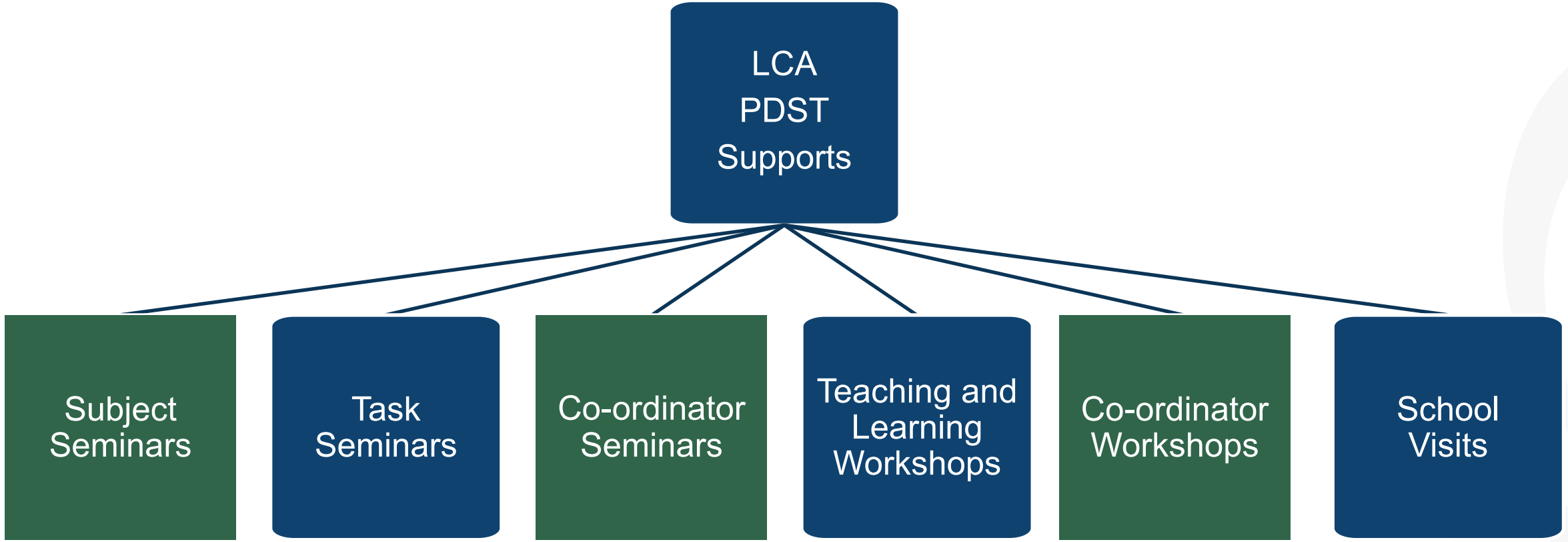
Real documents and authentic context are paramount to exploring the mathematical implications of decisions

We should consider all Mathematical Concepts and Skills (MCS's) when engaging with learning outcomes

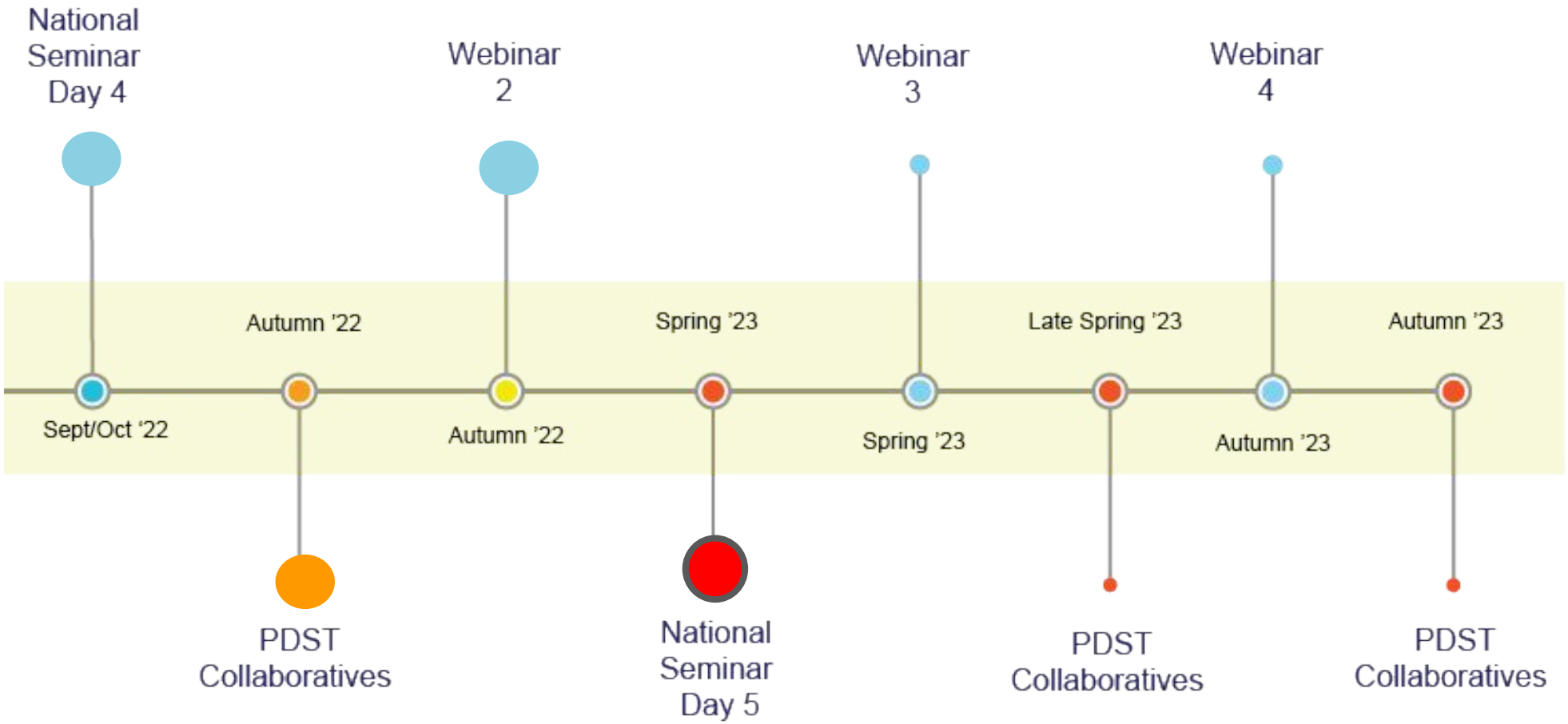
Supports provided by PDST



LCA Supports provided by PDST



CPD for the revised module descriptors



Leaving Certificate Applied Subject Specification CPD

Session 1

By the end of this session participants will have:

Reflected on their experiences so far with the new module descriptor.

Explored Module 4 of the Mathematical Applications module descriptor.

Investigated transdisciplinary links, prior knowledge and working with real life documents.

Access to Resources

https://tinyurl.com/mathsappday5

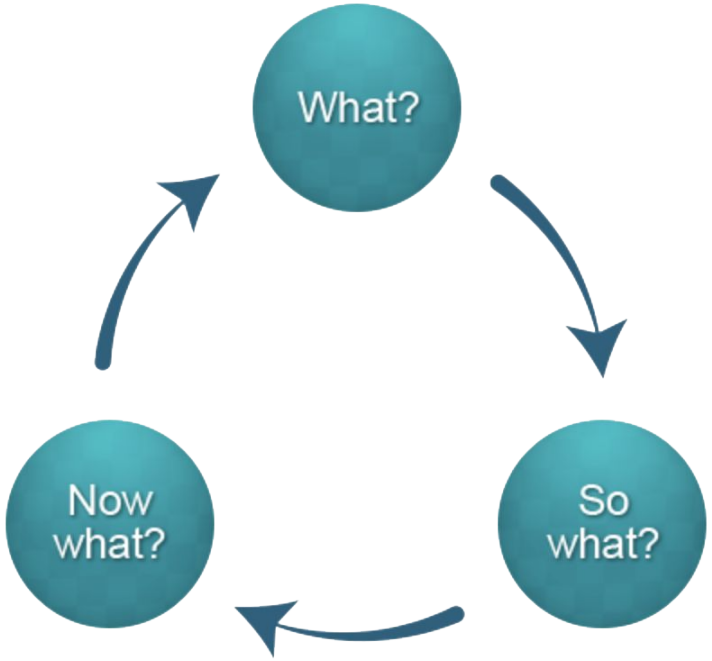
Considering the class profile

Reflecting on the journey so far

What success have you found through your engagement with the modules?

If you started again next year, what would you need to consider?

What was your key learning and how has this impacted upon students' learning?



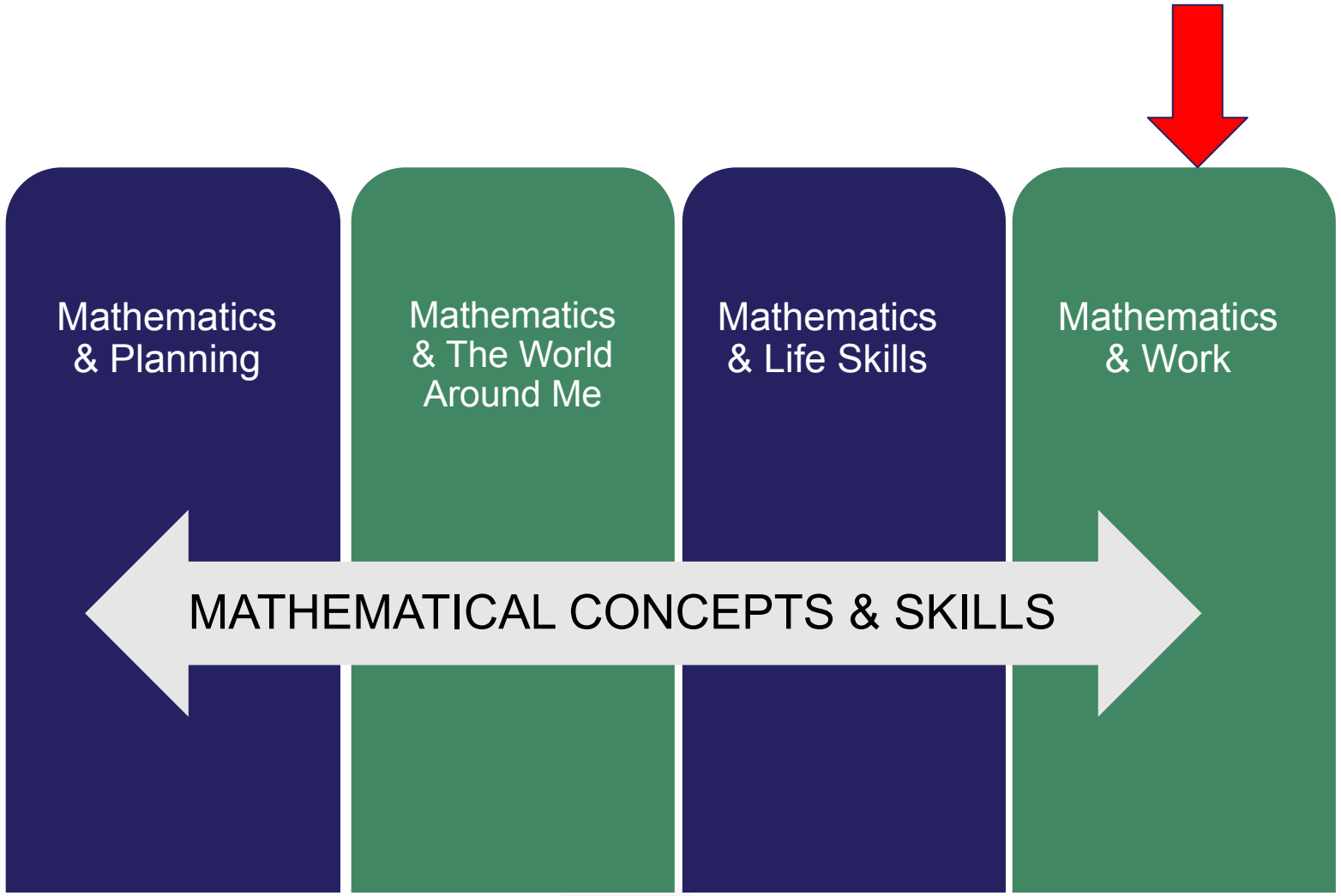
Rolfe et al. 2001

Question Board

Menti for participant questions

Mentimeter

Module Progression



UNIT 1

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

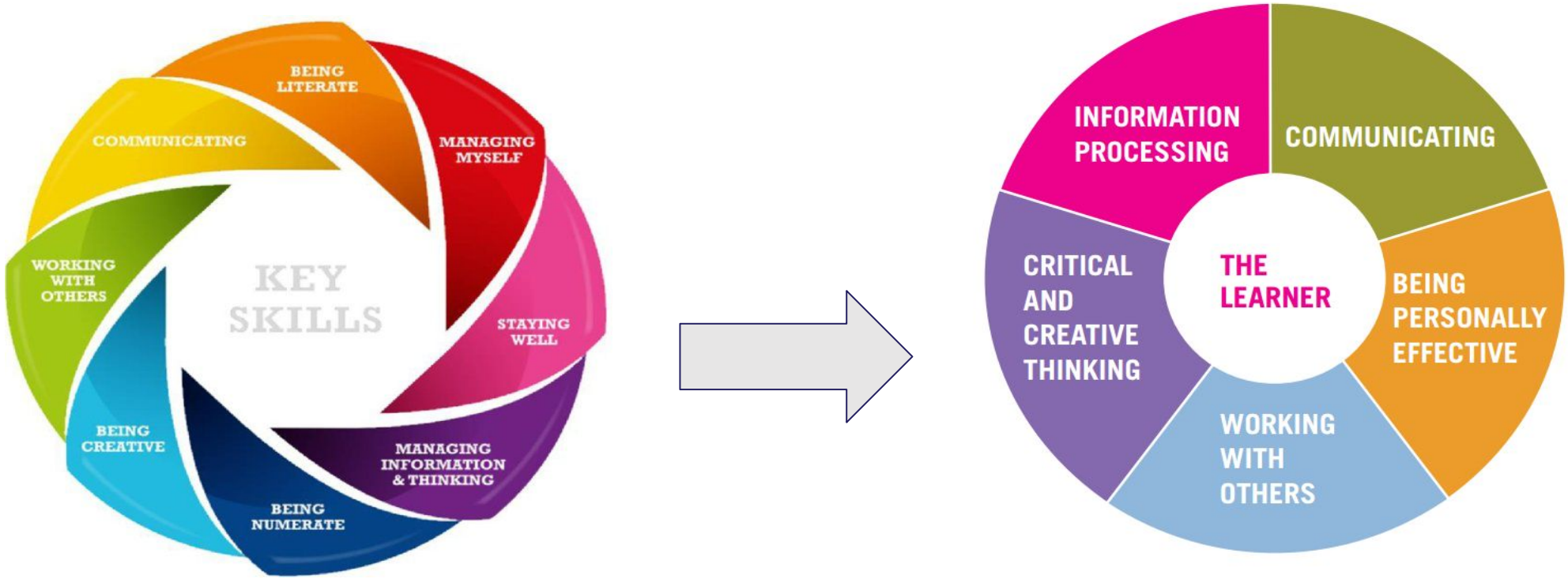
Learning outcomes

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

1. Analyse and interpret information about income and expenditure represented in words/ equations/tables /graphs or charts.
2. Create an estimate for a job, including costings such as materials, labour, taxes and profit margin.
3. Analyse, interpret and communicate relevant information in relation to wages, time worked and holidays communicated in words/tables/charts/ payslips or graphs.
4. Compare and contrast different job contracts and justify decisions made with mathematics.

Teacher Guidelines
Page 36

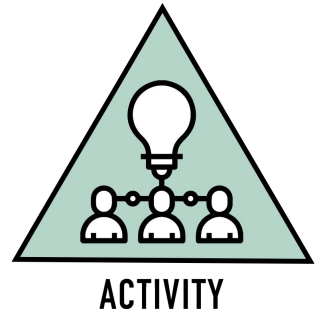
Building on Key Skills from Junior Cycle



All the key skills required for successful learning by students across the curriculum at junior cycle are relevant for LCA Mathematical Applications. (Module descriptor page 10)

Prior Knowledge and Experience

	Unit 1: Mathematics and Work
Primary School	
JC Maths/ TY Maths	
Module 1,2 and 3 Maths Applications	
Other school work	
Other Life Skills	
MCS (1-5)	



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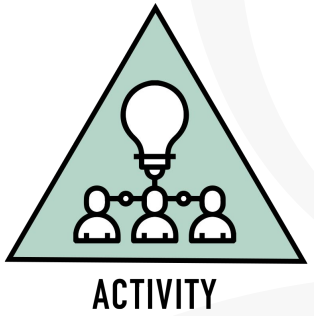
Prior Knowledge and Real Life Documents

What prior knowledge would students need to have to engage with these real life documents?

What potential is there to engage with Mathematical Concepts and Skills?

What transdisciplinary links could we make?

How could you use this in the classroom?



Planning For The Learning Outcomes

What knowledge, understanding, skills and values do our students need?

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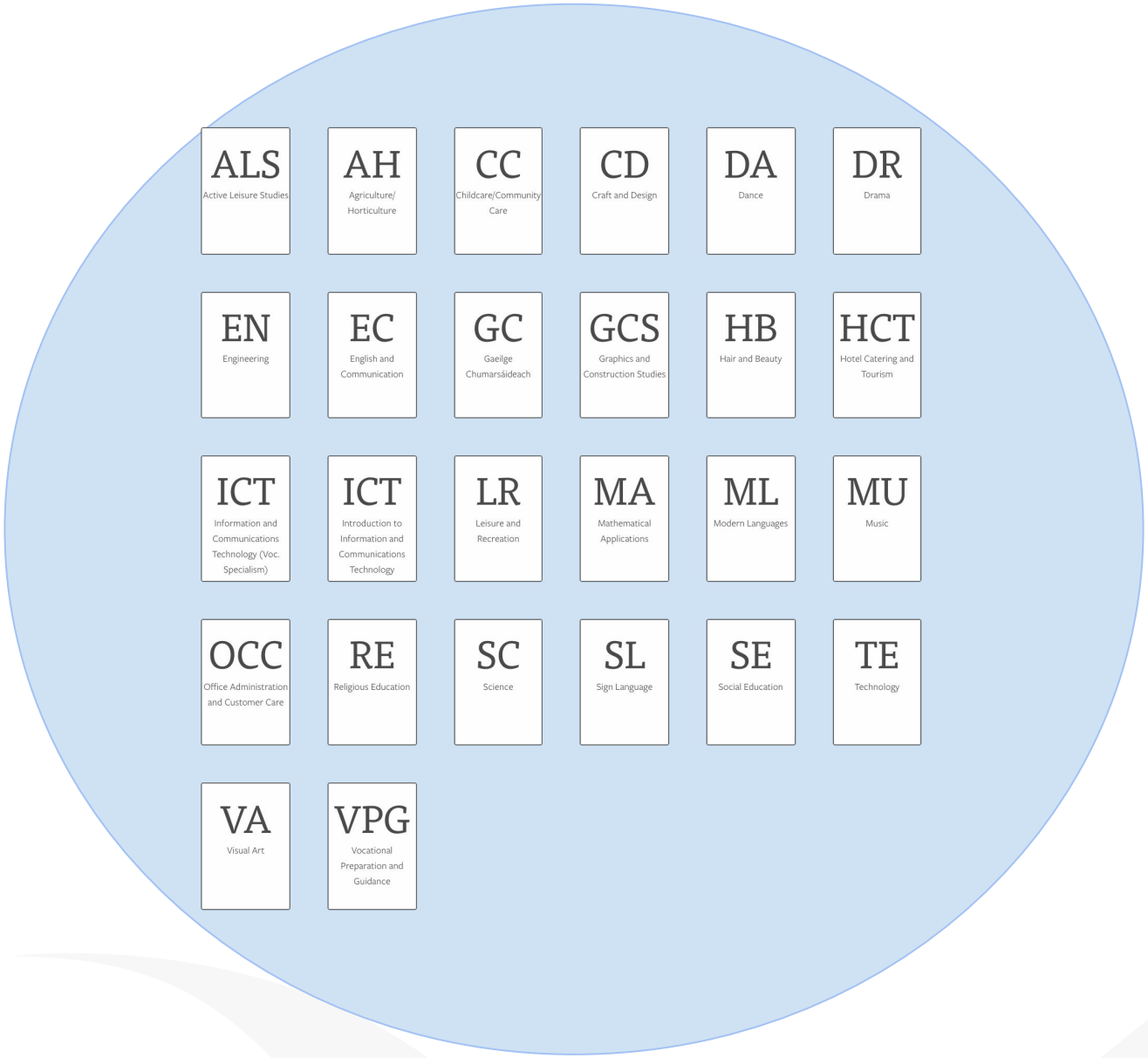
Planning For The Learning Outcomes

How will I recognise their progression? What do they need to develop next?	What will I do to get them there? What MCS's are involved in your learning outcome?

Transdisciplinary Links: Mathematics and work



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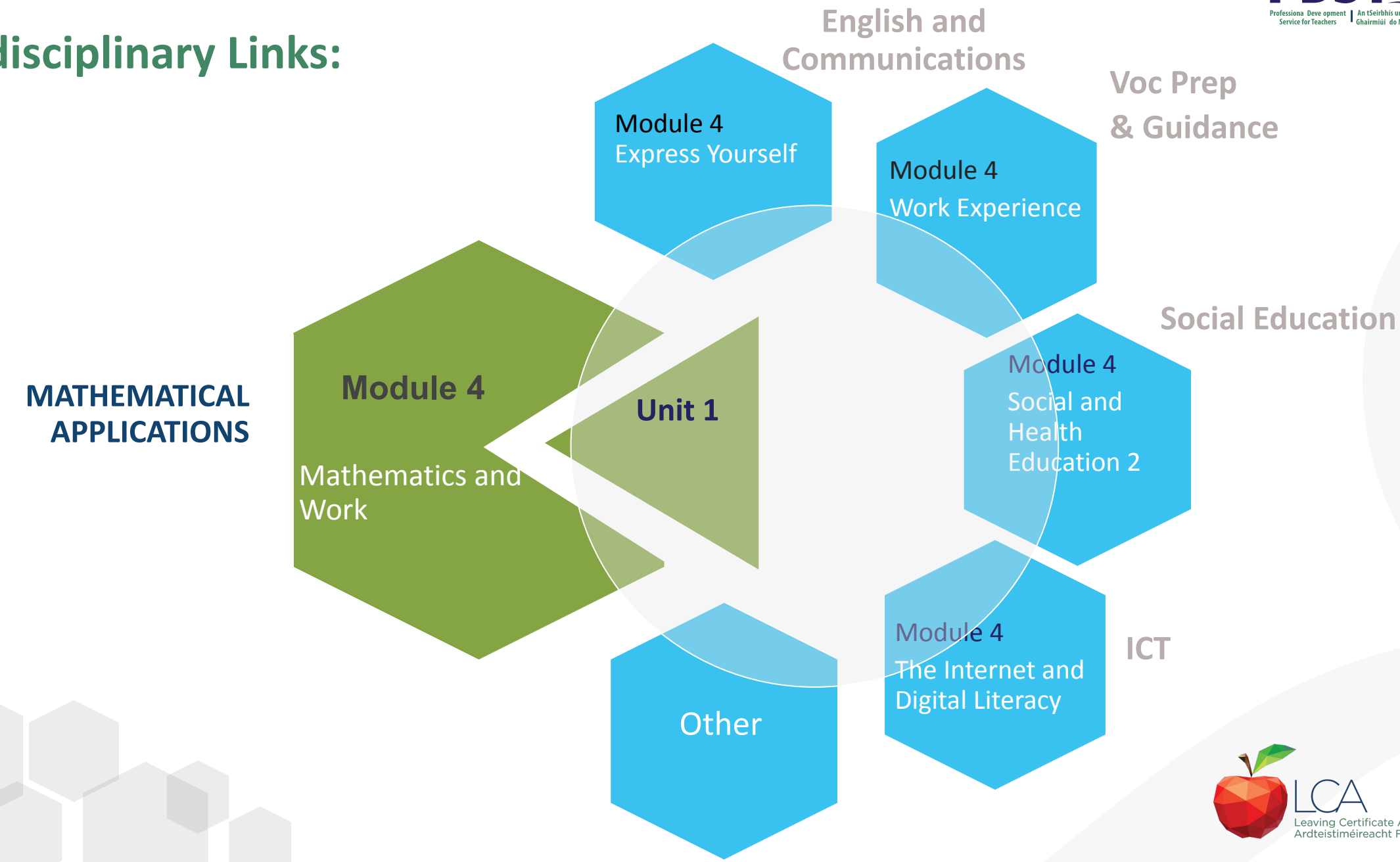
Transdisciplinary Links:



Session 1

By the end of this session participants will have:

Reflected on their experiences so far with new module descriptor.

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Day 5
Session 2

Session 2

By the end of this session participants will have:

Explored teaching and learning strategies for Module 4 Mathematics and Work incorporating MCS's to support the range of abilities using the student profiles identified.

Considered the use of peer feedback in the Mathematical Applications classroom.

Designing Rich Learning Experiences

1

Learning Outcomes
"What and Why"

Mathematical Concepts and skills (MCS)

2

Prior knowledge and skills

3

Select Learning Activity

2

Plan Formative Assessment

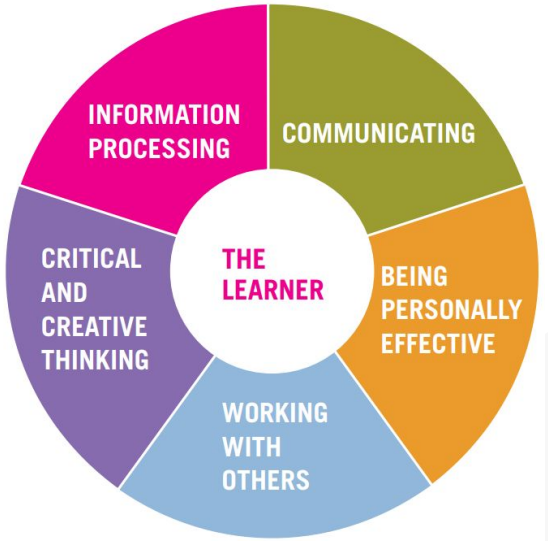
4

Prepare Resources

Designing Rich Learning Experiences

Learning activity selection allows us to effectively engage with the specification and identify connections between learning outcomes and MCS's.

Learning activities that make connections with the real world and other modules allows students to gain a deeper understanding of what they are learning



Authentic Context: A Year in the life…….Student Activity

Student Activity

The aim of this activity is to calculate your monthly take home pay by investigating a chosen job/career and then use this information to inform your choices about lifestyle and complete a budget.

The task is split into three parts:

Part a) Choose a career option and calculate your monthly income.

Part b) Calculate all of your expenditure under the appropriate headings.

Part c) After completing the activity, you will need to complete the monthly budget.

Authentic Context: A Year in the life……..Student Activity

Learning Outcomes:

LO1 analyse and interpret information about income and expenditure represented in words/equations/tables/graphs or charts.

LO3 Analyse, interpret and communicate relevant information in relation to wages, time worked, and holidays communicated in words/tables/charts/payslips for graphs

Mathematical Concepts and Skills :

MCS 1 a, b and c

MCS 2 a

MCS 5 c

Authentic Context: A Year in the life……..Part A

What do your students need to consider in identifying career goals ?

What do your students need to consider when completing a payslip?

What support might students need to address this question?

Learning Outcomes:

LO 1

LO 3

Mathematical Concepts and Skills :

MCS 1 a, b and c

MCS 2 a

MCS 5 c

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Authentic Context: A Year in the life……..Part B

Group 1: Accommodation

Group 2: Gas and electricity

Group 3: Television, phone and broadband

Group 4: Transportation

Group 5: Food,clothes, entertainment and holidays

What do your students need to consider in investigating each area of expenditure ?
How could your students represent this information graphically ?
What support might students need to address this question?

Learning Outcomes:
LO 1
LO 3

Mathematical Concepts and Skills :

MCS 1 a, b and c

MCS 2 a

MCS 5 c

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Authentic Context: A Year in the life……..Part c

What support do your students need to consider when analysing and interpreting the budget?

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

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

Learning Outcomes:

LO 1

LO 3

Mathematical Concepts and Skills :

MCS 1 a, b and c

MCS 2 a

MCS 5 c

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Authentic Context: Job Costing …..Student Activity

Your uncle has moved into a new home and would like to put laminate flooring throughout the whole ground floor of his house. He has asked you to cost this job for him.

The laminate flooring he has chosen comes in packs which each cover 2 m^2.

Each room also needs a trim around the perimeter of the room.

The trim comes in packs which have a total length of 5m.

Learning Outcomes:
LO 2

Mathematical Concepts and Skills :

MCS 1 a, b and c

MCS 2 a

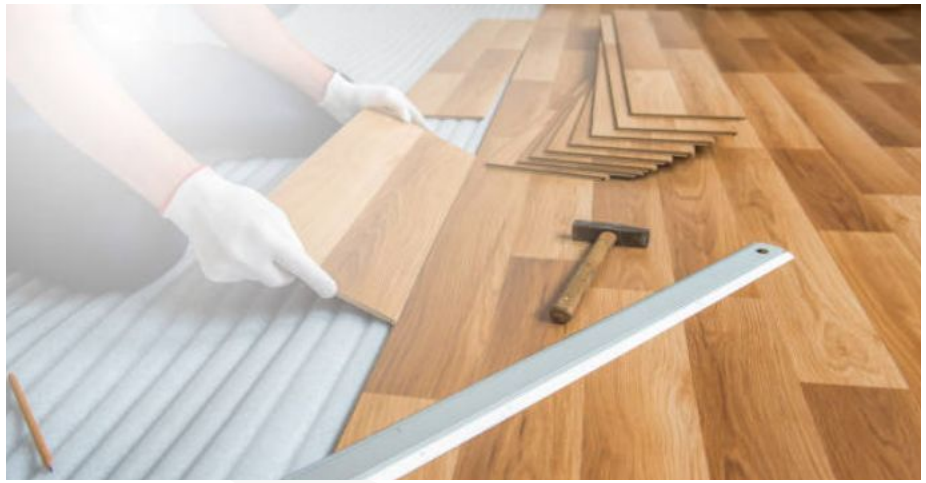
MCS 3 a and c

Authentic Context: Job Costing …..Student Activity

What support do your students need to consider when costing a job?

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

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



Learning Outcomes:
LO 2

Mathematical Concepts and Skills :

MCS 1 a, b and c

MCS 2 a

MCS 3 a and c

Authentic Context-Job Costing

Peer feedback steps:

1. The first time you read through your partner's piece of work hold off giving any comments

2. If you notice that there are mistakes just point out the problem and let the person fix it themselves.

3. Try to point out what has been done well, what has been less successful along with suggestions for improvement

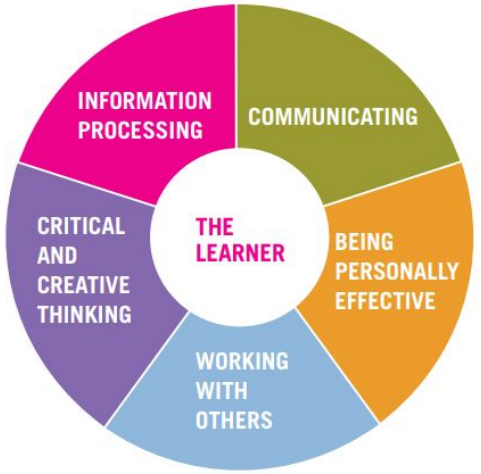
4. Make your comments as specific as possible reminding your partner of the success criteria

5. Be honest with each other and sensitive too.

Authentic Context-Job Costing

It’s more than correcting…. ‘Engaging in peer and self-assessment is much more than checking for errors or weaknesses. It involves making explicit what is normally implicit and thus requires the student to be more active in their learning. The students become more aware of when they are learning and when they are not.’ -

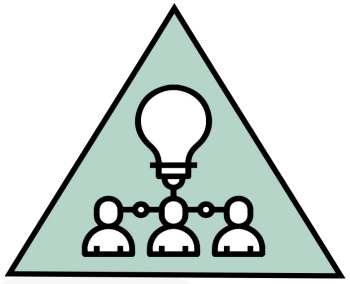
Black & Wiliam: Working Inside the Black Box



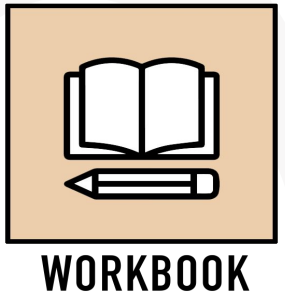
WORKBOOK

Planning a unit of learning

How do you plan units of learning for LCA Mathematical Applications? What are the essential elements?



How do you plan in order to develop the students' ability to solve quantitative problems that they encounter in the world around them



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Day 5
Session 3

Session 3

By the end of this session participants will have:

Planned a student-centered unit of learning for Module 4 Mathematics and Work incorporating the yearly plan.

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

Planning within your school context

Scoilnet Calendar

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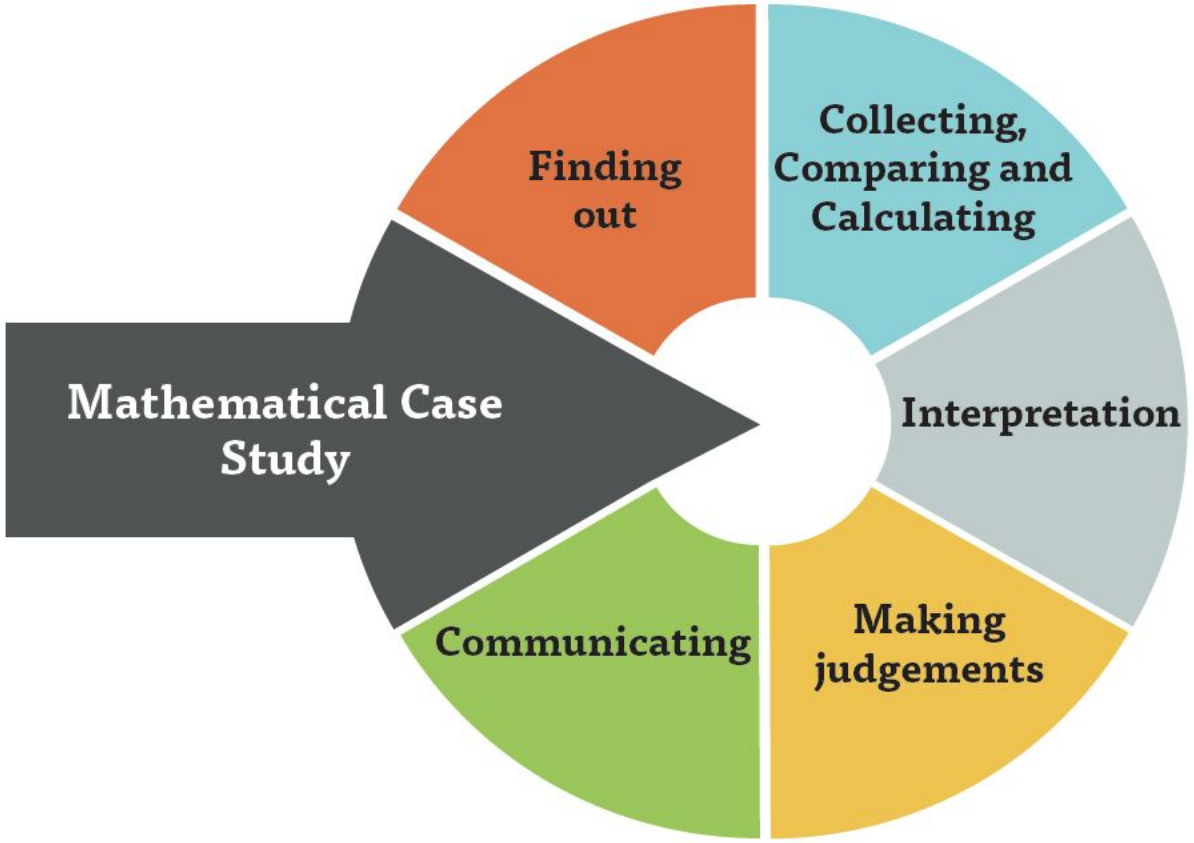
Learning outcomes based unit of learning

Select the learning outcome(s) from the unit that you wish to progress with your students

Consider your three students

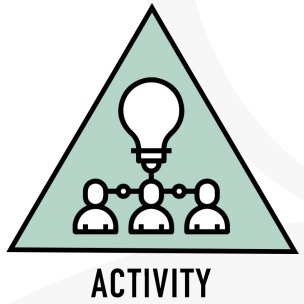
Design an activity with teacher guidelines and the learning outcome(s) in mind

Key Assignment:
Mathematical Case Study



Planning a unit of learning

1. Choose your learning outcome(s).
2. Identify the Mathematical Concepts and Skills underpinning the learning outcome(s) and the prior knowledge of students.
3. Incorporate elements from your yearly plan.
4. Design a student learning activity (activities) and associated learning intentions and success criteria that achieve learning outcome(s) and develop key skills. Consider your three LCA Students.
5. Outline the number of weeks for the learning activity.
6. Identify links to other LCA subjects.
7. Identify opportunities for formative assessment.
8. Develop a case study for this unit.



Sharing of Ideas: Gallery Walk

Next Steps

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?

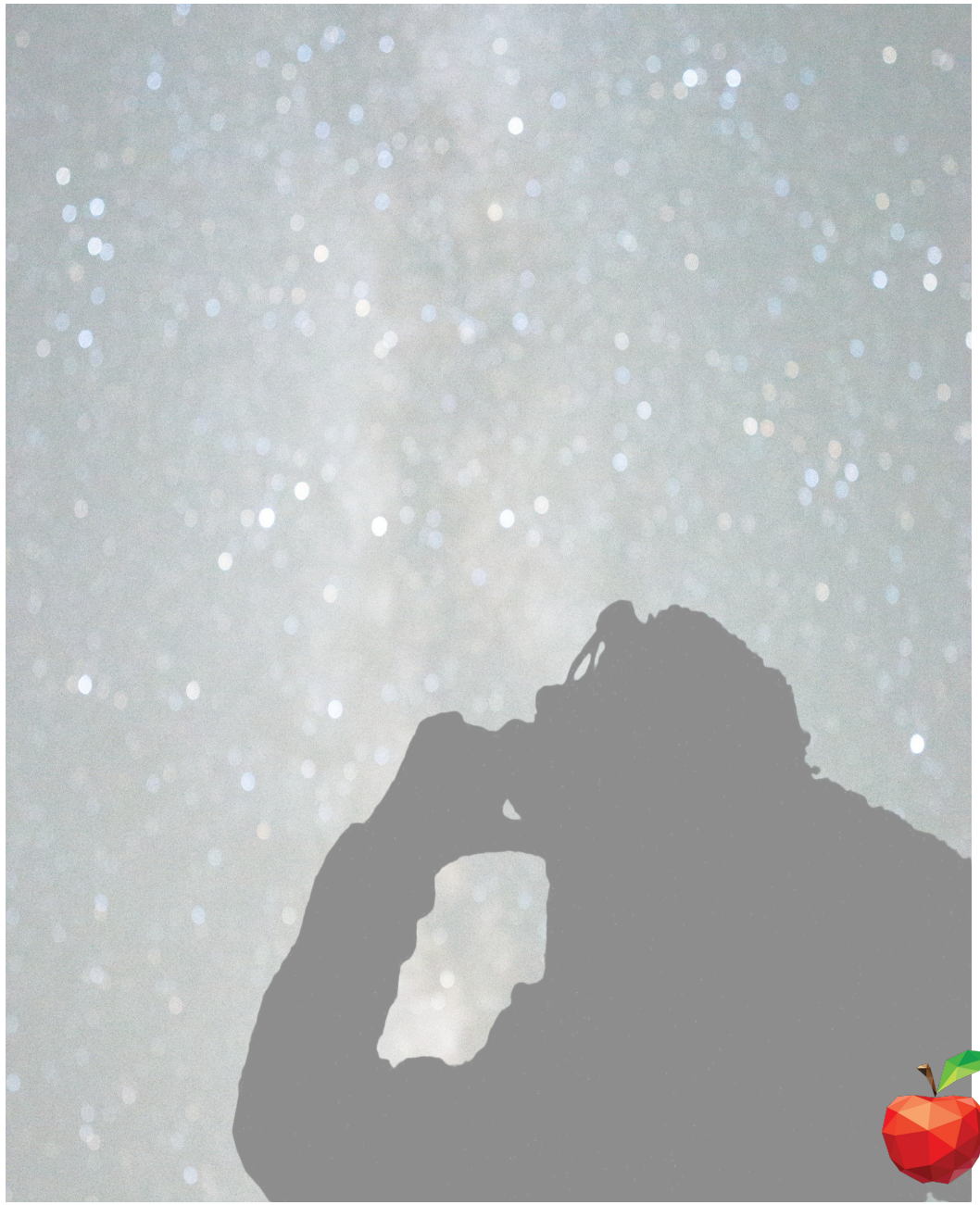


Photo by Riccardo Annandale on Unsplash

ACTIVITY

WORKBOOK

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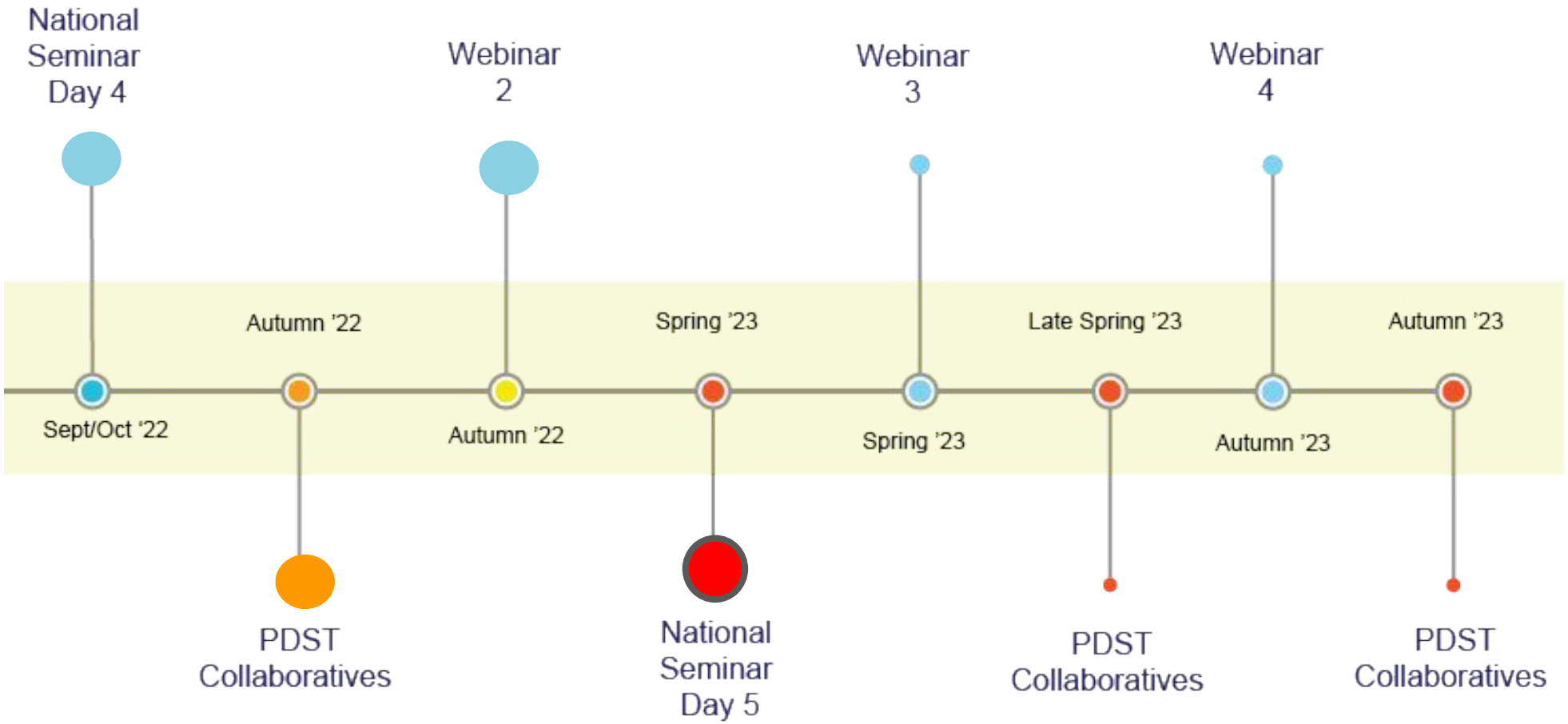
Question Board Revisited

CPD for the revised module descriptors



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End of Seminar