

Anytime, anyplace – developing online maths support at Australian Catholic University

Digitalising AALL practice

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Academic Skills Unit, Australian Catholic University

AALL Conference, Geelong, Australia

1st – 3rd November 2017

Workshop overview

- Online learning
- ACU context
- Early developments
- Ongoing work
- Snapshots of the student experience
- ACU's development
- Going forward...

Online learning-improving student outcomes

- online learning recognised as ‘core business’
- early intervention with realistic expectations
- ‘teacher-presence’ vital in student retention
- engaging, interactive and supportive resources and delivery
- regular and structured contact with student
- learning analytics essential for effective intervention
- academic and professional staff collaboration

Source: Stone, C. (2017). Opportunity through online learning: Improving student access, participation and success in higher education. Retrieved from https://www.ncsehe.edu.au/wp-content/uploads/2017/03/CathyStone_EXECUTIVE-SUMMARY.pdf

Australian Catholic University



The Daniel Mannix Building, Melbourne Campus

ACU context

- Development of resources as needed by students after consultation with faculties
- Aim for 3 resources for each topic:
 - Tip Sheet
 - Worksheet
 - PowerPoint
 - Video
 - Self-assessments with explanations & worked solutions
- Resources prepared according to principles of UDL

Early developments

Face-to-face

- workshops
- consultations
- drop-ins

Subject-specific tutorials/workshops

PowerPoints presenting subject-specific skills/techniques

LANTITE preparation video

Index laws

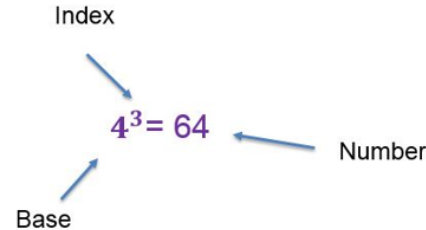
An index (power, exponent) indicates the number of times a term is multiplied by itself.

$$4 \times 4 \times 4 = 4^3 = 64$$

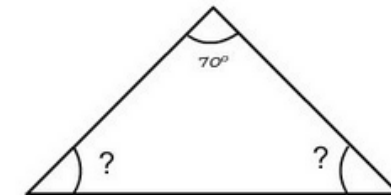
4^3 is read as '4 to the power 3' or simply '4 cubed'.

- 4 is called the **base**.
- 3 is called the **index** or **power** (or **exponent**) because it indicates the power to which the base, 4, is raised.
- 64 is the **basic numeral** (or **number**).

Indices are used to express both small (negative indices) and large (positive indices) numbers.



Q1 In the triangle below, James found one angle measured 70° , and the other two angles are equal to each other.



Which of the following is the correct method for finding the size of the two equal angles?

- ☐ Multiply 70 by 2 and subtract from 180
- ☐ Multiply 55 by 2 and subtract from 180
- ☐ Subtract 70 from 180 and then divide by 3
- ☐ Subtract 70 from 180 and then divide by 2

Ongoing work

Online workshops

Online consultations


Interactive self-assessments

LANTITE preparation workshops – F2F and online

Tip sheets


Adobe Captivate videos of specific skills/techniques

FAQs

Percentages to fractions 

- Put percentage over 100 and cancel

eg $35\% = \frac{35}{100}$

$$\frac{\cancel{5}^{+5} 35}{\cancel{100}^{+5}} = \frac{7}{20}$$


Use Polya's 4 step approach



Figure 1: Polya's 4 step approach to problem solving

Read to understand

- Read the problem.
- Pick out key words, figures, units, and identify the question to be answered.

Devise a plan

- Draw a diagram if possible.
- Find a connection between the unknown and known (any formula or rule).
- Look for any supplementary information.
- Decide on a method – systematic or creative or both?

Carry out the plan

- Execute the method.
- Follow mathematical conventions.

Check your answer

- Did the method give a result? Did it work?
- Is the result reasonable and accurate?
- Can/Should the method be modified for a more satisfactory result?
- Repeat from Step 1 above until a satisfactory result is achieved.

Snapshots of the student experience

- Self-assessments
- Online workshops
- Online consultation
- Online drop-ins

Self-assessment



General Maths Skills Self-Assessment

Welcome to this general maths skills self-assessment. It comprises 10 questions covering a range of different skills.

After each question you will receive instant confirmation of whether you have answered correctly or not.

At the end, you will be given the result of your efforts and the option to see solutions to questions you answered incorrectly, or to all the questions, or none at all.

There will also be links to websites you can visit to get more examples of each type of question.

You must answer each question before advancing to the next one.

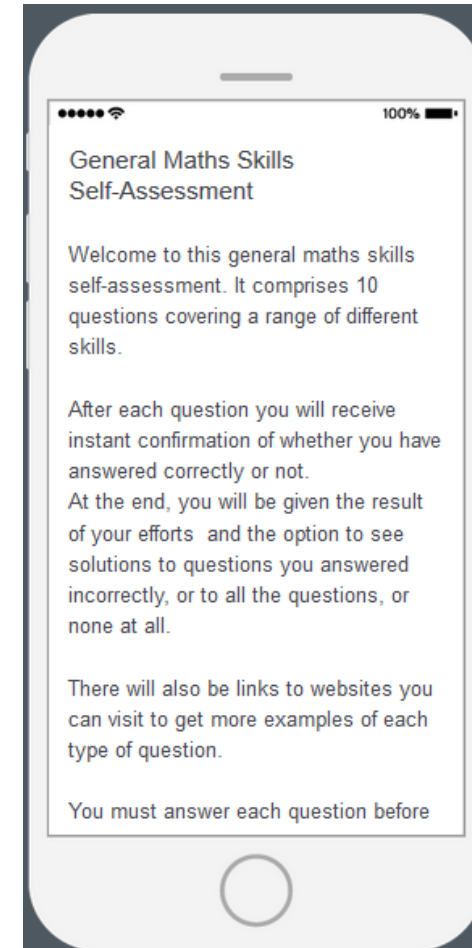
On your computer, click your selection or on your mobile device, tap on your selection. Then click or tap NEXT for the next question.

Click or tap NEXT when you are ready to begin.

https://acu.qualtrics.com/jfe/form/SV_0216dJ2t7MVmVLL

NEXT

[Try a sample self-assessment here.](https://acu.qualtrics.com/jfe/form/SV_0216dJ2t7MVmVLL)



Online workshop

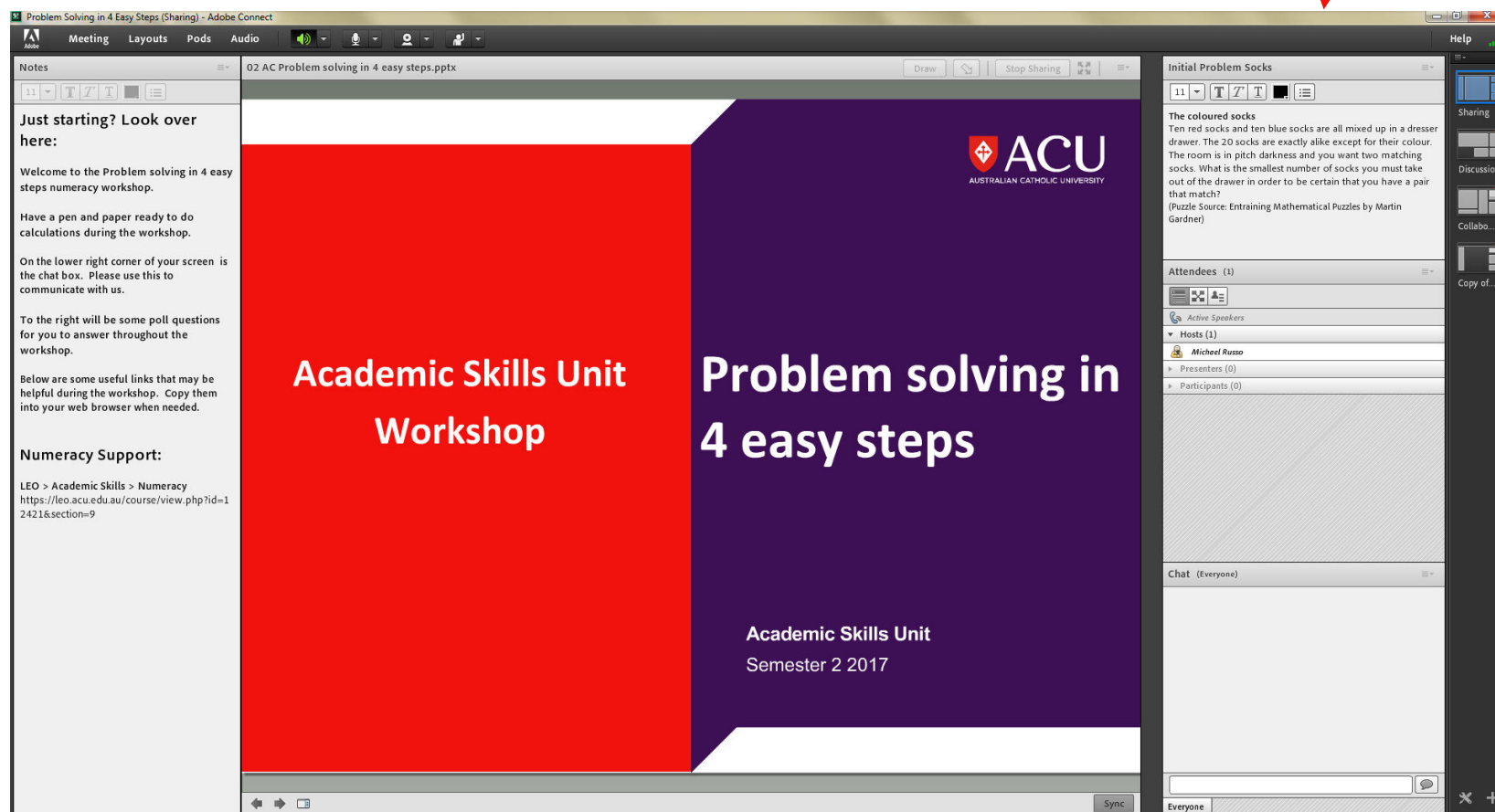
Support notes

Main work screen

Starting puzzle

list of participants

chat box



Notes

Just starting? Look over here:

Welcome to the Problem solving in 4 easy steps numeracy workshop.

Have a pen and paper ready to do calculations during the workshop.

On the lower right corner of your screen is the chat box. Please use this to communicate with us.

To the right will be some poll questions for you to answer throughout the workshop.

Below are some useful links that may be helpful during the workshop. Copy them into your web browser when needed.

Numeracy Support:

LEO > Academic Skills > Numeracy
<https://leo.acu.edu.au/course/view.php?id=12421§ion=9>

02 AC Problem solving in 4 easy steps.pptx

Academic Skills Unit Workshop

Problem solving in 4 easy steps

Initial Problem Socks

The coloured socks
 Ten red socks and ten blue socks are all mixed up in a dresser drawer. The 20 socks are exactly alike except for their colour. The room is in pitch darkness and you want two matching socks. What is the smallest number of socks you must take out of the drawer in order to be certain that you have a pair that match?
 (Puzzle Source: Entraining Mathematical Puzzles by Martin Gardner)

Attendees (1)

Active Speakers

Hosts (1)

Michael Russo

Presenters (0)

Participants (0)

Chat (Everyone)

Online workshop

Workshop question



Students answer in the poll



Problem Solving in 4 Easy Steps (Sharing) - Adobe Connect

Meeting Layouts Pods Audio

Notes 02 AC Problem solving in 4 easy steps.pptx

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Your turn

5. The language courses

View Votes Edit End Poll

How many students are not taking either course?

Type your answer here...

☐ Broadcast Results

Answers (0)

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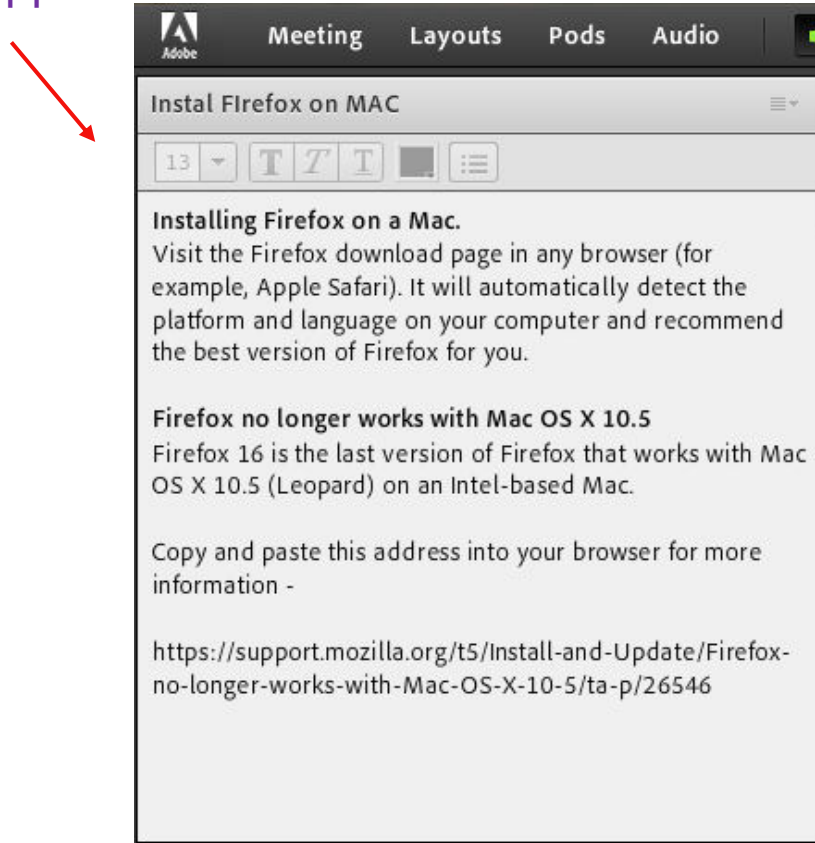
Chat (Everyone)

Sync

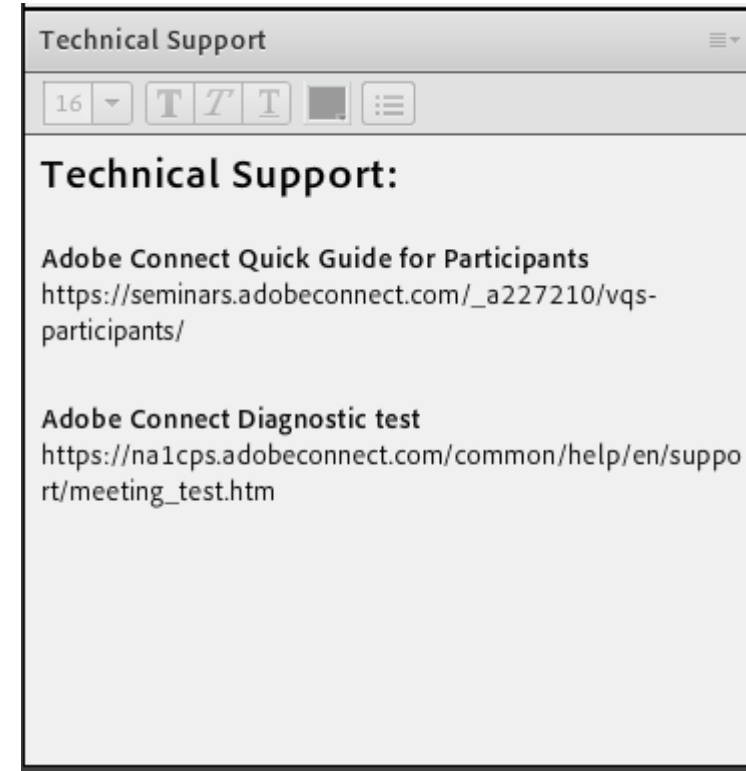
Everyone

Online workshop supports

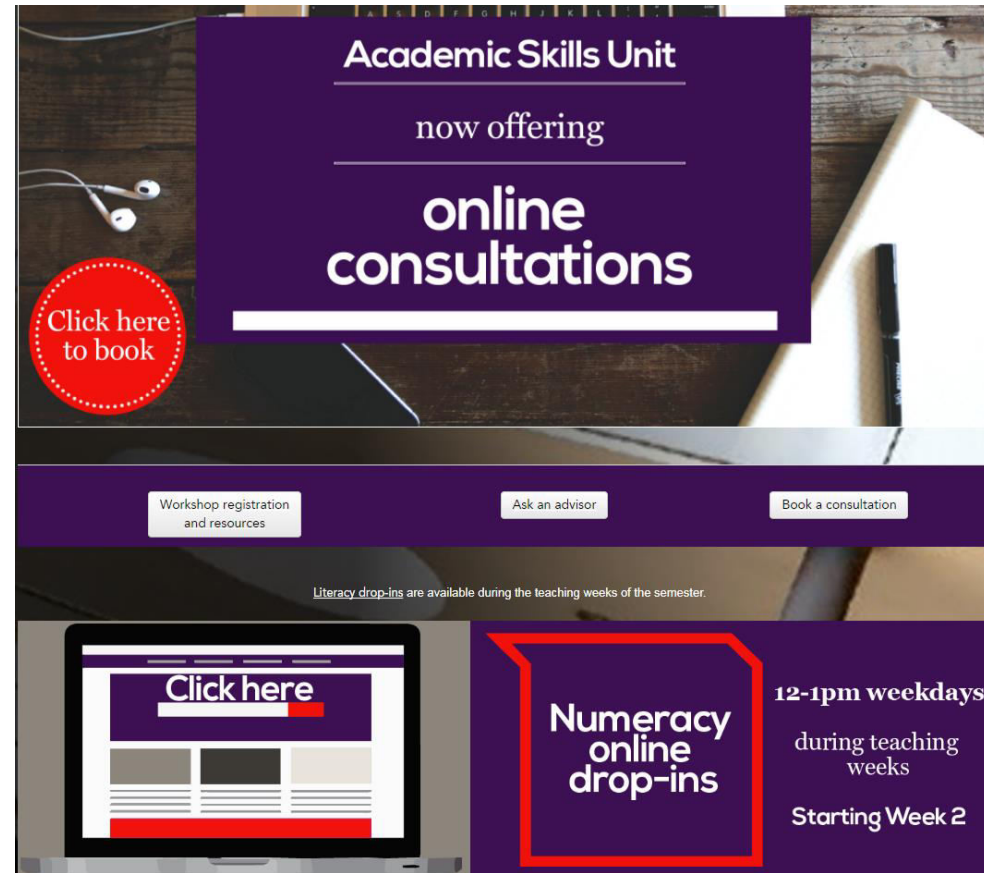
Specific support notes



Technical support notes



LEO- Learning Environment Online



The banner features a background image of a wooden desk with a laptop, headphones, and a pen. A large purple box in the center contains the text 'Academic Skills Unit', 'now offering', and 'online consultations'. A red circular button on the left says 'Click here to book'. Below the purple box is a navigation bar with three buttons: 'Workshop registration and resources', 'Ask an advisor', and 'Book a consultation'. A small line of text below the navigation bar states 'Literacy drop-ins are available during the teaching weeks of the semester.' At the bottom, there is a section for 'Numeracy online drop-ins' with a red-bordered box containing the text 'Click here' and 'Numeracy online drop-ins'. To the right of this box, the text reads '12-1pm weekdays during teaching weeks' and 'Starting Week 2'.

Academic Skills Unit
now offering
online consultations

Click here to book

Workshop registration and resources Ask an advisor Book a consultation

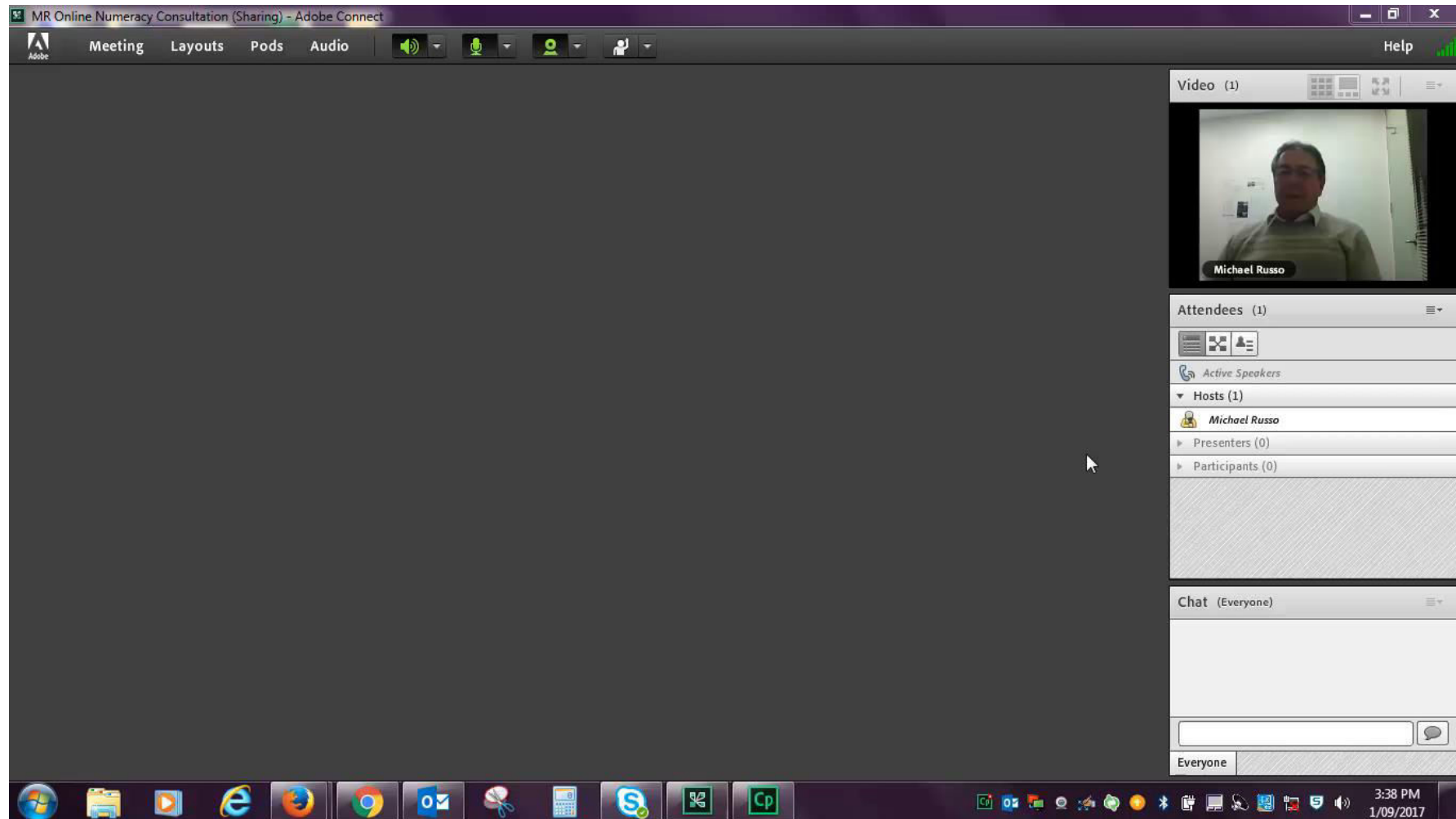
Literacy drop-ins are available during the teaching weeks of the semester.

Click here

Numeracy online drop-ins

12-1pm weekdays
during teaching weeks
Starting Week 2

Online consultation



Moodle online drop-ins



12:12 Mark:

I have the answer sheet so I know the working out already, I just don't understand the law of sin part



12:13 Mark:

$A/\sin a = B/\sin b$

12:14 Trevor:

Yes, the work/energy physics problems are really tricky to understand between concept and example.



12:14 Mark:

$45/\sin \text{angle} = 39.37/\sin 45$



12:15 Mark:

i dont understand how that goes to: $\sin \text{angle} = 45 \sin 45 / 39.37$



12:15 Mark:

Please help

12:16 Trevor:

Yes, the law of sines really simply states that if you divide the length of side a by the sine of angle a, it is the same as taking the length of side b by the sine of angle b etc.

12:16 Trevor:

Drawing it up as a diagram will help immensely to understand it

Have we improved student outcomes in online learning?

- ✓ online learning recognised as 'core business'
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Going forward . . .

- LEO 2.0
- FAQs from transcripts of drop-ins
- Increased number of self-assessments
- Expanded online workshop topics, ensuring each workshop has associated other resources (e.g., tip sheets, work sheets)
- Increased collaboration with academics