

**First Year in Maths NSW**  
 Assessment & Work Integrated Learning  
 Monday 5 December 2022  
 University of Wollongong, Wollongong Campus  
 Building 67, Room 303

9:30–10:00	Registration, tea/coffee
10:00–10:30	<b>Don Shearman</b> Assessment in tertiary mathematics post COVID-19 – the global picture
10:30–11:00	<b>Janet Hunter</b> Do higher levels of Maths at School really prepare students for University Maths?
11:00–11:20	Morning tea
11:20–11:50	<b>Amanda Shaker</b> e-Assessment with R/exams
11:50–12:20	<b>Nazim Khan</b> Student Feedback—Useful or Wasteful
12:20–12:50	<b>Ian Whiteway</b> Combining Good Mental Models with “Look First” Efficiency
12:50–1:50	Lunch
1:50–2:20	<b>Matt Moores</b> Citi Bike: an authentic assessment for statistics & data science
2:20–2:50	<b>Florian Breuer</b> Squid: A system for creating and deploying randomised question pools
2:50–3:20	<b>Pauline O’Shaughnessy</b> The use of Moodle quiz feature for assignments in large subjects
3:20–3:40	Afternoon tea
3:40–4:10	<b>Brainstorm</b> What does WIL look like for mathematics and when should students start experiencing WIL?
4:10–4:40	
5:45–late	Dinner (own cost): XXX

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## Abstracts

**Don Shearman** (Western Sydney University, d.shearman@westernsydney.edu.au)

### **Assessment in tertiary mathematics post COVID-19 – the global picture**

Assessment in tertiary mathematics subjects has become one of the most significant challenges of learning and teaching during the pandemic.

What will the new normal look like for mathematics examinations and who will decide what that is?

In Australia there has been a move to online assessment and the removal of final assessment at many universities during the COVID-19 pandemic. As we come out of the pandemic and enter a new normal, several universities are making a push to continue with this form of final assessment or lack thereof. This is being viewed with considerable concern by mathematics departments (and others) at the universities concerned.

In order to measure the extent of this trend and the opinions of academics in Australia and beyond the First Year in Mathematics group has released a survey to gather data on how assessment, particularly final examinations, has changed in universities and whether these changes are in the best interests of assessing students' abilities.

In this talk we will present the results of this survey. Note that this talk will extend the results presented at the July workshop to cover responses from around the world.

**Janet Hunter** (Ascham School, jhunter@ascham.nsw.edu.au)

### **Do higher levels of Maths at School really prepare students for University Maths?**

People interested in Mathematics teaching in NSW would be likely to have seen the articles published in the media about the recent HSC Mathematics Extension 1 and Extension 2 papers put before the candidates for 2022. There is much debate about to what extent these papers tested the syllabus produced by NESA and whether or not that knowledge is useful as a preparation for tertiary Mathematics study. With enrolments in higher levels of Mathematics declining, looming Mathematics teacher shortages and the widening gap between academics and school teachers, can any problems be solved?

**Amanda Shaker** (La Trobe University, a.shaker@latrobe.edu.au)

### **e-Assessment with R/exams**

Following the events that have taken place over the past several years, e-assessment is a method of assessment that many of us have become much more familiar with. R/exams (<https://www.r-exams.org/>) is an open-source e-assessment package that allows for the dynamic creation of randomised questions that can be fully integrated within Learning Management Systems such as Moodle, Blackboard and Canvas. In this talk, I will demonstrate several ways R/exams has been used for assessment within in a first-year introductory statistics subject. Various question types will be highlighted, along with some of the different assessment types for which the R/exams e-assessment package can be used. Finally, question design considerations will be discussed, along with results and reflections regarding this e-assessment approach.

**R Nazim Khan** (The University of Western Australia, nazim.khan@uwa.edu.au)

### **Student Feedback—Useful or Wasteful**

Every university in Australia has some form of student feedback each semester. This usually consists of a series of Likert scale questions relating to the unit delivery and the teaching. An open student comment section is also included. Usually the feedback portal is open toward the end of semester and closes at the end of semester before the examination period.

Several questions may be raised regarding this feedback system.

1. Who should be eligible to respond to the feedback?
2. What should be the timing of the feedback?
3. How should the feedback be used?

I shall discuss some of these questions in this presentation. This is expected to be an active session where I would like to hear the views and experiences of the FYi community.

**Ian Whiteway** (St Andrew's Cathedral School, iwhiteway@sacs.nsw.edu.au)

### **Combining Good Mental Models with “Look First” Efficiency**

Defective mental models can greatly hold back a student's mathematical progress and “looking first” can certainly allow more efficient mathematics to proceed.

This presentation will take up the theme of two of last year's December presentations\* to illustrate how clear mental models and “looking first” efficiency both facilitate mathematical progress. Promoting these aspects of mathematics education will aid the current generation of high school mathematicians as well as the tertiary students (including those with poor numeracy) who may well teach the next generation.

Ideally, mathematical assessment should provide opportunities to measure whether students can go beyond (poorly-understood) algorithms and also demonstrate efficiency by looking first.

**Matt Moores** (University of Wollongong, mmoores@uow.edu.au)

### **Citi Bike: an authentic assessment for statistics & data science**

Since we first offered our Introduction to Statistics subject in 2018, we have included a group assessment where students perform exploratory data analysis using the Citi Bike dataset. The bicycle sharing service Citi Bike in New York City makes its data publicly available for download as comma-separated value (CSV) files. This is an excellent resource for first-year students in statistics and data science to gain hands-on experience in analysing real-world data. In my talk, I will discuss how we scaffold towards this assessment, as well as how it serves the learning outcomes of our mathematics and data science degrees, including our Work-Integrated Learning (WIL) Curriculum Classification Framework.

**Florian Breuer** (University of Newcastle, [florian.breuer@newcastle.edu.au](mailto:florian.breuer@newcastle.edu.au))

**Squid: A system for creating and deploying randomised question pools**

I will outline a Python-based system for creating randomised Mathematics question pools. These can be directly uploaded to Canvas or Blackboard, or assembled into quizzes which can be uploaded to Canvas or printed on paper. I will also give a brief preview of functionality for scanning the paper quizzes and uploading the results to Canvas. This is work in progress, but has been used in a First-year course at the University of Newcastle.

**Pauline O'Shaughnessy** (University of Wollongong, [poshaugh@uow.edu.au](mailto:poshaugh@uow.edu.au))

**The use of Moodle quiz feature for assignments in large subjects**

In the large-scale subjects, there are real problems with academic misconduct of students copying each other's work and managing marking in a reasonable timeframe. The quiz function in Moodle can potentially offer solutions to these problems. In STAT252, Statistics for Science, I used the Moodle quiz feature and the associated question bank to set up assignments instead of using the conventional assignment feature. When students started their tasks, assignments were individually generated by drawing a set of questions from the question bank. It largely reduces the occurrence of students copying each other's work directly. The Moodle quiz function also helps with easing the burden of marking. Calculation-based questions are automatically marked, with an option to show detailed steps of the work, which can be manually checked by markers. All marks are added automatically and sorted in the Moodle Gradebook. This reduces the chance of human error and reduce the amount of time to complete marking for the whole class.