EDUC8250

Effective Instruction for Struggling Mathematical Learners

Session 1, Online-flexible 2025

Macquarie School of Education

Contents

General Information

Unit convenor and teaching staff
Unit Convener, Lecturer and Marker
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Credit points
10

Prerequisites
Admission to MSpecEd or GradDipSpecEd or MInc&SpecEd or GradDipInc&SpecEd or GradCertLearnDiffSuppTeach

Corequisites

Co-badged status

Unit description
This unit is designed to provide knowledge and skills necessary to guide instructional and assessment practices in the area of mathematics, including processes for providing effective support to facilitate learning for students with mathematical difficulties. It focuses on recent recommendations of evidence-informed and high impact practices, such as the use of explicit instruction, the need for clear and concise mathematical language, use of multiple representations and number-lines, deliberate instruction in word problems, and the importance of arithmetical fluency. Relevant diagnostic and instructional models are critiqued in terms of their theoretical bases, empirical support and implications for implementation.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

> **ULO1:** apply advanced discipline knowledge and scholarly understanding to evaluate student learning of mathematics
>
> **ULO2:** draw on domain knowledge to critically reflect on your own professional knowledge and practice
>
> **ULO3:** apply domain knowledge to examine and critically evaluate theories and research that underpin practice in the field of mathematics instruction

ULO4: develop appropriate assessment, monitoring and adaptation / intervention strategies to meet the needs of diverse learners

ULO5: synthesize concepts effectively through written and oral communication

General Assessment Information

General Submission Information

Please format assessments using 12-point font and 1.5 spacing.

All assessments must be submitted electronically. Turnitin plagiarism detection software is used to check all written assessments. It is the responsibility of all students to ensure that their submitted work is in a format compatible with Turnitin software for plagiarism checking. Submissions must meet the required file type and formatting specifications outlined in the assessment guidelines. Failure to submit work in an acceptable format may result in delays in processing your submission and potential penalties for non-compliance with assessment requirements. If you are unsure about the file format or have technical difficulties, it is your responsibility to seek assistance before the submission deadline. Students should be careful to check that they submit the correct file for an assessment as no re-submissions will be accepted after the due date and time, including instances where students upload an incorrect file. It is not the responsibility of unit staff to contact students who have failed to submit assessments. If you have any missing items of assessment, it is your responsibility to contact the unit convenor.

Students can use Turnitin's Originality Report as a learning tool to improve their academic writing if this option is made available in the unit. Word limits are strictly applied. Work above the word limit will not be marked.

Use of Artificial Intelligence (AI)

Students should be aware of and apply the University policy on academic integrity (see: https://policies.mq.edu.au/document/view.php?id=3). Any student suspected of using unauthorised AI in an assignment will be referred to the Faculty of Arts Discipline Committee. Penalties can include reduced marks for an assessment, being awarded '0' for a task, failing an entire unit, being excluded from a course of study. Please see each assessment task description/ rubric for expectations about AI.

Special Consideration / Late Penalties

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day an assessment is not submitted, up until the 7th day (including weekends) (see: https://students.mq.edu.au/study/assessment-exams/special-consideration). Applications for extensions must be made via Service Connect. After the 7th day, a mark of 0 (zero) will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11:55pm. A 1-hour grace period is provided to students who experience a technical issue. This late penalty will apply to non-timed sensitive assessments (incl. essays, reports, posters, portfolios, journals, recordings etc). Late submission of time sensitive tasks (such as tests/exams, performance assessments/presentations, scheduled

practical assessments/labs etc) will only be addressed by the unit convenor in a Special Consideration application. A Special Consideration outcome may result in a new question or topic.

Marking

All assessments are marked using a rubric. Marking of all assessments is moderated by the Unit Convenor.

Quiz

The quiz is an individual assessment task and must be completed by each student individually. Similarities in responses between students will be checked and investigated for possible collusion.

University policy on grading

Assignments will be awarded grades ranging from HD to F according to guidelines set out in the University's Grading System and University Assessment Policy. To attain a pass or higher grade in Professional Experience a student must obtain a satisfactory in both the Professional Experience component and a pass or higher grade in the academic component. For Professional Experience units the Professional Experience Evaluation Report is marked as Satisfactory or Unsatisfactory. The Macquarie Teaching Performance Assessment (MQTPA - in final WIL/PEx units) is marked as Not met, Met or Exceeds.

Results

Results shown in iLearn, or released directly by your Unit Convenor, are not confirmed because they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit Service Connect.

Withdrawing from this unit

If you are considering withdrawing from this unit, please seek academic advice via Service Connect before doing so as this unit may be a co-requisite or prerequisite for units in the following sessions and may impact on your course progression.

Assessment Tasks

Name	Weighting	Hurdle	Due
Annotated bibliography and essay	50%	No	23:55 13/04/2025
Mathematics Problem Set	50%	No	23:55 08/06/2025

Annotated bibliography and essay

Assessment Type [1]: Annotated bibliography

Indicative Time on Task [2]: 32 hours
Due: **23:55 13/04/2025**
Weighting: **50%**

Students will work in small groups (up to 4) to conduct a literature search focused on one element of high impact, evidenced-based practice. The group together will produce a collated annotated bibliography. Each individual student will then write one essay that provides a summary and critical evaluation of this evidence, and a reflection of how this would impact your own professional practice. Word limit is 3000 words.

On successful completion you will be able to:

- apply advanced discipline knowledge and scholarly understanding to evaluate student learning of mathematics
- draw on domain knowledge to critically reflect on your own professional knowledge and practice
- apply domain knowledge to examine and critically evaluate theories and research that underpin practice in the field of mathematics instruction
- synthesize concepts effectively through written and oral communication

Mathematics Problem Set

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 33 hours
Due: **23:55 08/06/2025**
Weighting: **50%**

Students will be provided with a task (or a set of tasks) designed to develop and apply their knowledge of supporting students' learning of mathematics. For example, this may be conducting web and literature searches to find suitable tasks to assess different areas of mathematics, a case study where the student is asked to identify suitable methods of assessment and to explain an instructional approach or intervention that could be used to support the learning of the student, or a lesson plan where the student is asked to recommend adaptations to instruction, resources, and assessments to accommodate diverse learners. Word limit is 3000 words.

On successful completion you will be able to:

- apply advanced discipline knowledge and scholarly understanding to evaluate student learning of mathematics

- draw on domain knowledge to critically reflect on your own professional knowledge and practice
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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Required and Recommended Texts

A variety of readings will be used throughout this course, and where possible we aim to ensure that these are freely and electonically available. More information will be provided on the iLearn site.

Learning and Teaching Activities

This unit is delivered to allow fully online flexible learning. There are no scheduled tutorials. Each module will consist of a number of presentations, online resources, readings, and activities. Your first assignment is a group assignment to allow you to engage with your fellow students.

Information about the unit iLearn site

This unit has a full web presence through iLearn.

Information for students about access to the online component of this unit is available at https://ilearn.mq.edu.au/login/index.php. You will need to enter your student username and password.

Please do NOT contact the Unit Convenor regarding iLearn technical help. Assistance is available from IT Helpdesk: via email onehelp@mq.edu.au or Ph: 9850 4357 or 1800 67 4357. On Campus: Ground floor at 18 Wally's Walk.

Unit Schedule

A detailed outline of the weekly content, activities, and assessments will be provided on the

iLearn site

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the Service Connect Portal, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/ offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

5Rs Framework

The 5Rs Framework, developed by the School of Education at Macquarie University, is embedded throughout your course. Your use of the 5Rs Framework will help you develop the capabilities that will make your teaching career sustainable and fulfilling. In this unit, you will

learn using the 5Rs framework in the following important ways:

Resilient: Many students lack confidence in their own ability to teach maths and many indicate (in their online introductions) that they expect to find the course challenging and much of the content new to them. Students are encouraged to support each other and to share experiences, on the understanding that there is no judgment from staff or peers.

Reflexive: All students reflect on their current teaching practices and consider adaptations to pedagogy and assessment that supports a range of diverse student abilities. During discussions students verbalise this reflexive thinking, and some describe changes they are going to implement in their practice.

Responsive: During discussion reforums, students are expected to be responsive to the ideas of peers and providing meaningful and supportive feedback. In reflecting on their own practice, they are also expcted to think about and demonstrate how they would be responsive to the needs of students with diverse abilities.

Ready to Learn: Many students taking this course have limited exposure to teaching maths, or are expanding their skill set to become special education teachers. In taking this unit they have identified their own learning needs for their context and are pursuing that learning to achieve the best outcomes for all students.

Research engaged: The importance of research based practice and making evidence based decisions for teaching instruction is embedded in all topics of the unit. Each week students are exposed to a research studies which present evidence for a particular pedagogical approach. Students are asked to critically evaluate research evidence as part of their assignments.

Unit information based on version 2025.02 of the Handbook