



# EDST3520

## Teaching Mathematics, and Science and Technology in Early Childhood

Session 1, In person-scheduled-weekday, North Ryde 2025

*Macquarie School of Education*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

Laurinda Lomas

[laurinda.lomas@mq.edu.au](mailto:laurinda.lomas@mq.edu.au)

Contact via email

25 Wallys Walk Level 6 East B649

By appointment

Catherine Jones

[catherine.jones@mq.edu.au](mailto:catherine.jones@mq.edu.au)

Credit points

10

Prerequisites

120cp at 1000 level or above including EDST1518 or admission to BTeach(ECE)

Corequisites

Co-badged status

Unit description

This unit explores mathematical and scientific thinking, teaching and learning in early childhood education (birth to five years). Key mathematical and scientific concepts and processes will be investigated and considered in terms of theory, research, pedagogical practice and play-based learning. Students will gain in-depth understandings of how mathematics, science and technology underpin ways of acquiring and processing information about the world, now and in the future.

## 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:** Demonstrate a fundamental understanding of the major theoretical developments, central concepts, modes of enquiry, pedagogical practice in early childhood mathematics and science.

**ULO2:** Develop skills in designing, implementing and evaluating learning experience

sequences using relevant current government frameworks.

**ULO3:** Begin to evaluate mathematics, science and technology learning resources in light of their experience as a teacher of young children.

**ULO4:** Develop an understanding of different learning approaches to teaching and learning mathematics, and science, and technology and the need for pedagogical approaches that are socially and culturally relevant.

**ULO5:** Demonstrate effective communication suitable for a range of professional contexts relevant to teaching of mathematics and science.

## General Assessment Information

### General Submission Information

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.

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 your course progression.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Science in play-based learning</a>	50%	No	06/04/2025
<a href="#">Essay and lesson design</a>	50%	No	01/06/2025

## Science in play-based learning

Assessment Type <sup>1</sup>: Lesson plan

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **06/04/2025**

Weighting: **50%**

Develop learning experiences in science based on a provocation.

On successful completion you will be able to:

- Demonstrate a fundamental understanding of the major theoretical developments, central concepts, modes of enquiry, pedagogical practice in early childhood mathematics and science.
- Develop skills in designing, implementing and evaluating learning experience sequences using relevant current government frameworks.
- Develop an understanding of different learning approaches to teaching and learning mathematics, and science, and technology and the need for pedagogical approaches that are socially and culturally relevant.
- Demonstrate effective communication suitable for a range of professional contexts relevant to teaching of mathematics and science.

## Essay and lesson design

Assessment Type <sup>1</sup>: Lesson plan

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **01/06/2025**

Weighting: **50%**

Essay and a lesson plan focused on mathematical concepts and processes in storytelling.

On successful completion you will be able to:

- Demonstrate a fundamental understanding of the major theoretical developments, central concepts, modes of enquiry, pedagogical practice in early childhood mathematics and science.
- Develop skills in designing, implementing and evaluating learning experience sequences using relevant current government frameworks.
- Begin to evaluate mathematics, science and technology learning resources in light of their experience as a teacher of young children.
- Develop an understanding of different learning approaches to teaching and learning mathematics, and science, and technology and the need for pedagogical approaches

that are socially and culturally relevant.

- Demonstrate effective communication suitable for a range of professional contexts relevant to teaching of mathematics and science.

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<sup>1</sup> 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.

<sup>2</sup> 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 texts:

McDonald, A. (2024). *Mathematics in Early Childhood Education*. Victoria: Oxford

Campbell, C., Jobling, W., & Howitt, C. (2024). *Science in early childhood*. Cambridge

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](mailto:onehelp@mq.edu.au) or Ph: 9850 4357 or 1800 67 4357. On Campus: Ground floor at 18 Wally's Walk.

## Unit Schedule

Please see iLearn

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://policies.mq.edu.au) (<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) (<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) (<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](https://connect.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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/>

## Academic Success

[Academic Success](#) 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/](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.

## School of Education Procedures

In addition, the following policies and procedures for the Macquarie School of Education apply to this unit.

### Communication

It is the student's responsibility to check all electronic communication on a weekly basis. Communication may occur via:

- Official MQ Student Email Address
- The Dialogue function on iLearn
- Other iLearn communication functions

### Attendance and Participation

See the University timetable for information about when classes begin in this unit. [Creating your timetable - Enrolling | Macquarie University, Sydney \(mq.edu.au\)](#)



Attendance at all synchronous activities, completion of non-synchronous formative/diagnostic class tasks and involvement in professional forums is expected as the Bachelor of Education (Early Childhood) and Bachelor of Education (Early Childhood and Primary) are a professional qualifications. Activities completed during weekly on campus days (INFQ mode) are essential for building the core knowledge and/or skills required to demonstrate the learning outcomes of this unit and to meet the AITSL Graduate Teacher Standards and/or ACECQA requirements. **Attendance at all on campus days is expected and will be recorded.** Make up tasks *may* be given if attendance is missed to ensure all content is covered to meet accreditation requirements.

Students are required to attend the tutorial in which they are enrolled. Any changes to tutorial enrolments must be completed officially through e-Student. Please do not contact the unit convenor to request a change.

### **Infrequent Attendance Students**

Information about the dates of the on-campus sessions can be found in the university timetable. [Creating your timetable - Enrolling | Macquarie University, Sydney \(mq.edu.au\)](https://mq.edu.au/study/creating-your-timetable)

- **The on campus sessions are essential to student engagement and learning and attendance is expected.** Failure to attend or not to have an approved Special Consideration may result in a Fail grade.
- Prior to the on campus sessions, students should have read the prescribed readings and listened to the lectures, summarise the main points, and make notes of the key terms and definitions. Prepare any discussion questions of your own that you wish to share.
- Please make effective use of the online component of the unit and access iLearn regularly. Keep up to date with listening to the lectures on a weekly basis.
- Further details and any updates about times and locations will be posted on iLearn as an Announcement during first half of the semester.

## **Changes from Previous Offering**

EDST3520 is a new unit in 2025

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Unit information based on version 2025.03 of the [Handbook](#)