EDUC258

Mathematics in Schools

S3 External 2019

Department of Educational Studies

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General Information

Unit convenor and teaching staff
Susan Busatto
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Tutor
Sue Wall
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Credit points
3

Prerequisites
((12cp at 100 level or above) including EDUC105 or EDUC106) or (admission to BEd(Prim) or BEd(Sec))

Corequisites

Co-badged status

Unit description
This unit is designed for intending primary teachers and intending secondary Mathematics teachers. It focuses on the factors affecting school students' learning of Mathematics. Three major themes are addressed: the meaning of selected basic concepts; how students learn these basic concepts; and how teaching can influence student learning. Lectures examine current research perspectives on learning and teaching Mathematics in schools, while tutorial classes provide opportunities for intending primary and secondary mathematics teachers to engage in group work and problem-solving activities. The unit is also offered in Session 3.

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:

1. Demonstrate knowledge and understanding of research into how students learn certain fundamental mathematical ideas and the implications for teaching.
2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
3. Demonstrate understanding of the concepts, substance and structure of the content

and teaching strategies of mathematics

4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas

5. Demonstrate understanding of the content covered in the unit.

General Assessment Information

Assessment Presentation and Submission Guidelines

Please follow these guidelines when you submit each assignment:

- Allow a left and right-hand margin of at least 2cm in all assignments.
- Please type all assignments using 12-point font and 1.5 spacing.
- All assessments must be submitted through Turnitin in .doc or .pdf format
- It is the responsibility of the student to ensure that all assessments are successfully submitted through Turnitin.
- Faculty assignment cover sheets are NOT required

Draft Submissions & Turnitin Originality Reports

- Students may use Turnitin's Originality Report as a learning tool to improve their academic writing if this option is made available in the unit.
- Students are strongly encouraged to upload a draft copy of each assessment to Turnitin at least one week prior to the due date to obtain an Originality Report.
- The Originality Report provides students with a similarity index that may indicate if plagiarism has occurred. Students will be able to make amendments to their drafts prior to their final submission on the due date.
- Generally, one Originality Report is generated every 24 hours up to the due date.

Please note:

- Students should regularly save a copy of all assignments before submission,
- Students are responsible for checking that their submission has been successful and has been submitted by the due date and time.

Assignment extensions and late penalties

- In general, there should be no need for extensions except through illness or misadventure that would be categorised as serious and unavoidable disruption according to the University definition of same, see:https://students.mq.edu.au/study/my-study-program/special-consideration
- Applications for extensions must be made via AskMQ according to the Special Consideration policy. Extensions can only be granted if they meet the Special

Considerations policy and are submitted via https://ask.mq.edu.au/. This will ensure consistency in the consideration of such requests is maintained.

- Late submissions without extension will receive a penalty of 5% reduction of the total possible mark for each day late (including weekends and public holidays). You are reminded that submitting even just 1 day late could be the difference between passing and failing a unit. Late penalties are applied by unit convenors or their delegates after tasks are assessed.
- No assessable work will be accepted after the return/release of marked work on the same topic. If a student is still permitted to submit on the basis of unavoidable disruption, an alternative topic may be set.
- Students should keep an electronic file of all assessments. Claims regarding "lost" assessments cannot be made if the file cannot be produced. It is also advisable to keep an electronic file of all drafts and the final submission on a USB untouched/unopened after submission. This can be used to demonstrate easily that the assessment has not been amended after the submission date.

Requesting a re-assessment of an assignment

If you have **evidence** that your task has been incorrectly assessed against the grade descriptors you can request a re-mark. To request a re-mark you need to contact the unit convenor within **7 days** of the date of return of the assignment and provide **a detailed assessment of your script against the task criteria.** Evidence from your assignment must be provided to support your judgements.

Note: Failed assessments cannot be re-marked as they are all double-marked as a part of the moderation process.

Please note: The outcome of a re-mark may be a **higher/lower or unchanged grade**. Grades are *standards referenced* and effort is NOT a criterion.

University policy on grading

Criteria for awarding grades for assessment tasks

Assignments will be awarded grades ranging from HD to F according to guidelines set out in the University's Grading Policy. The following descriptive criteria are included for your information.

Descriptive Criteria for awarding grades in the unit

In order to meet the unit outcomes and successfully pass this unit, students must make a genuine attempt at all assessment tasks. Where any submitted assessment task is considered to be unsatisfactory in this regard, the highest possible final grade that can be awarded for the unit will be 45.

Students will be awarded grades ranging from HD to F according to guidelines set out in the policy: https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment-in-effect-from-session-2-2016

The following generic grade descriptors provide university-wide standards for awarding final grades.

Grade	Descriptor
HD (High Distinction)	Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application as appropriate to the discipline.
D (Distinction)	Provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.
Cr (Credit)	Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the discipline.
P (Pass).	Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes
F (Fail)	Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.

Note: *If you fail a unit with a professional experience component the fail grade will be on your transcript irrespective of the timing of the placement.*

Withdrawing from this UG Unit

If you are considering withdrawing from this unit, please seek academic advice via https://ask.mq.edu.au before doing so as this unit may be a co-requisite or prerequisite for units in the following sessions and may impact on your progression through the degree.

Results

Results shown in iLearn, 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 ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due
Numeracy Interview Report	50%	No	December 20, 2019
Exam	50%	No	TBA

Numeracy Interview Report

Due: **December 20, 2019**
Weighting: **50%**

This assignment is designed to develop your ability to interpret the development of children's mathematical understanding and for you to produce a thoughtful and considered interpretation of one child's grasp of some basic numeracy concepts and skills

On successful completion you will be able to:

- 1. Demonstrate knowledge and understanding of research into how students learn certain fundamental mathematical ideas and the implications for teaching.
- 2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
- 3. Demonstrate understanding of the concepts, substance and structure of the content and teaching strategies of mathematics
- 4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas

Exam

Due: **TBA**
Weighting: **50%**

This exam will cover content from the five modules.

On successful completion you will be able to:

- 1. Demonstrate knowledge and understanding of research into how students learn certain fundamental mathematical ideas and the implications for teaching.
- 3. Demonstrate understanding of the concepts, substance and structure of the content and teaching strategies of mathematics
- 4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas
- 5. Demonstrate understanding of the content covered in the unit.

Delivery and Resources

The unit will be delivered over five On Campus Days. You are expected to listen to on-line lectures, engage in classroom discussions and activities, complete readings and work as described on iLearn.

The five On Campus Days will be held on **Wednesdays from 9 am to 12:30pm, on the following dates:**

December 4th, 11th and 18th, 2019; January 8th and 15th, 2020

This unit has a web presence through *iLearn*.

Students will need regular access to a computer and the Internet to complete this unit.

Weekly access to iLearn is compulsory for all students. Important assessment information will be posted here, as will other relevant unit notices and materials.

Electronic links and suggested references will be included in the Resources section. Please check the iLearn unit regularly.

Lectures

Weekly lectures are available on the web through the ECHO360 lecture component. You must listen to all lectures if you do not attend these 'live'.

Access and technical assistance

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

Please do **NOT** contact the Unit Convenor regarding *iLearn* technical help.

No extensions will be given for any technical issues. Allow enough time for your submissions.

Assistance is available from IT Helpdesk ph: 1800 67 4357, or log a request at help.mq.edu.au. OneHelp is the online IT support service for both students and staff.

This unit requires students to use several ICT and software skills:

- **Internet access**: The i*Learn* site contains materials for this unit; it is also required for the online submission of all Assessment Tasks, and for the use of Turnitin submission for ALL tasks.
- **Word processing, visual representations, and document formatting**: You are required to use an appropriate form of software to present your assignments.
- **Uploading** of assessment tasks to **iLearn**.

Structure

The unit comprises short on-line lectures and a face-to-face, three and a half tutorial each week on the dates listed at the top of this section.

In the tutorial students will discuss issues and questions arising from the lectures and prescribed readings. They are expected to base their arguments/discussions on evidence from published research and other relevant material. Attendance at all tutorials is expected.

There will be a supporting website for the unit providing additional readings, links and materials. Lectures will also be available through Echo in iLearn from the following website link: http://ilearn.mq.edu.au

Students are required to participate in small group activities, whole class discussion, to read the weekly material in advance, and to complete brief tasks either as individuals or in pairs. The weekly program for the course with the accompanying readings/ preparation is available on the following pages or on the unit ILearn site.

Unit Schedule

There are 5 modules in this Unit: one module per week

Module 1: Theories of learning and teaching mathematics

This module offers you a chance to reflect on your own experience of learning mathematics. We will examine some theories about learning and teaching mathematics with a view to developing a positive attitude and well informed ideas about how children learn mathematics.

Module 2: Learning and teaching Number and Algebra

This module examines approaches to conceptual development of the four operations: addition, subtraction, multiplication and division and how research influences learning and teaching strategies from the preschool through the primary grades. The notion of number sense and what is numeracy are also explored.

Module 3: Learning and teaching Number and Algebra

In this module you will review research on students' underlying conceptual development of rational numbers. We will also investigate the importance of patterning in the structural development of mathematics and how it is linked to early algebraic thinking.

Module 4: Learning and teaching Measurement and Geometry

In this module we explore two important areas that are interrelated because they both involve spatial thinking and awareness: measurement and geometry.

Module 5: An integrated approach to Statistics and Probability

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

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

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/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 ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Department Procedures

In addition, the following policies and procedures of the Department of Educational Studies are applicable in this unit.

Attendance for undergraduate units

All tutorials begin in Week 1 of Session 3, that is the week commencing 2 December, 2019.

Activities completed during weekly tutorials (internal) or on campus days (external) 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 tutorials or on campus days is expected and the roll will be taken.

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 requesting a change.

Unit Expectations

- Students are expected to read weekly readings before completing tasks and attending tutorials
- Students are expected to listen/attend weekly lectures before completing tasks and attending tutorials

Note: It is not the responsibility of unit staff to contact students who have failed to submit assignments. If you have any missing items of assessment, it is your responsibility to make contact with the unit convenor.

Electronic Communication

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

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

Twice Fail Rule for Professional Experience Units

General Coursework Rule 10(7) stipulates that if a student fails a required unit twice in an undergraduate professional program listed on Schedule 2, they may be permanently excluded from further enrolment in that program.

Students completing a double degree will be able to continue with their other degree program provided they meet the academic progression requirements of the Academic Progression Policy.

Students completing a single Education degree (such as the BEd) are advised to seek academic advice.

Student Support

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

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

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.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- 4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas
- 5. Demonstrate understanding of the content covered in the unit.

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- 2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
- 3. Demonstrate understanding of the concepts, substance and structure of the content and teaching strategies of mathematics
- 4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas
- 5. Demonstrate understanding of the content covered in the unit.

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- 1. Demonstrate knowledge and understanding of research into how students learn certain fundamental mathematical ideas and the implications for teaching.
- 2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
- 3. Demonstrate understanding of the concepts, substance and structure of the content and teaching strategies of mathematics
- 4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas
- 5. Demonstrate understanding of the content covered in the unit.

Assessment tasks

- Numeracy Interview Report
- Exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- 2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
- 3. Demonstrate understanding of the concepts, substance and structure of the content and teaching strategies of mathematics
- 4.Demonstrate knowledge and understanding of numeracy teaching and learning

strategies and their application in teaching areas

- 5. Demonstrate understanding of the content covered in the unit.

Assessment tasks

- Numeracy Interview Report
- Exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- 1. Demonstrate knowledge and understanding of research into how students learn certain fundamental mathematical ideas and the implications for teaching.
- 2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
- 5. Demonstrate understanding of the content covered in the unit.

Assessment tasks

- Numeracy Interview Report
- Exam

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- 1. Demonstrate knowledge and understanding of research into how students learn certain fundamental mathematical ideas and the implications for teaching.
- 2. Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities.
- 3. Demonstrate understanding of the concepts, substance and structure of the content

and teaching strategies of mathematics

- 4.Demonstrate knowledge and understanding of numeracy teaching and learning strategies and their application in teaching areas

Changes from Previous Offering

no changes