ECED827

Learning Through Mathematics, Science and Technology in Early Childhood Settings

S2 Day 2017

Department of Educational Studies

Contents

General Information

Unit convenor and teaching staff
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Credit points
4

Prerequisites
(ECED600 or ECED817) or (admission to MEChild or MEd or PGDipEdS or MIndigenousEd or MSpecEd or PGCertSpEd)

Corequisites

Co-badged status

Unit description
This unit explores theories of learning in mathematics, science and technology for young children (birth to five years). Students will examine the specialist role of play and conceptual development in a range of early childhood settings. Current issues in research and practice will be investigated through independent study. Students acquire autonomy and expert knowledge of pedagogy and content for mathematics, science and technology as they design and evaluate learning experiences for young children.

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 a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education

2. Examine the role of play in children's mathematics, science and technology learning

3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds

4. Evaluation a number of mathematics, science and technology resources

5. Locate and synthesise a wide range of research literature

Assessment Tasks

Name	Weighting	Hurdle	Due
Article	35%	No	20/10/2017
Literature review	35%	No	20/11/2017
Critical reflections	30%	No	Weekly

Article

Due: **20/10/2017**
Weighting: **35%**

Article on mathemtical and scientific learning experience for children aged birth to five.

On successful completion you will be able to:
- 1. Demonstrate a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education
- 2. Examine the role of play in children's mathematics, science and technology learning
- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds
- 5. Locate and synthesise a wide range of research literature

Literature review

Due: **20/11/2017**
Weighting: **35%**

Literature and resource review of technological resources that support mathematical and scientific learning in play-based curriculums.

On successful completion you will be able to:
- 1. Demonstrate a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education
- 2. Examine the role of play in children's mathematics, science and technology learning
- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds
- 4. Evaluation a number of mathematics, science and technology resources
- 5. Locate and synthesise a wide range of research literature

Critical reflections

Due: **Weekly**
Weighting: **30%**

Weekly online postings and engagement in profesisonal discucssion.

On successful completion you will be able to:
- 1. Demonstrate a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education
- 2. Examine the role of play in children's mathematics, science and technology learning
- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds

Delivery and Resources

Weekly online lectures and discussion.

Weekly tutorials for internal students and on campus session for external students.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration

In addition, a number of other policies can be found in the Learning and Teaching Category of 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/support/student_conduct/

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.

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

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

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- 2. Examine the role of play in children's mathematics, science and technology learning
- 3. Demonstrate how children use play to represent their experiences, construct

knowledge about, and make sense of their worlds

- 4. Evaluation a number of mathematics, science and technology resources
- 5. Locate and synthesise a wide range of research literature

Assessment task

- Critical reflections

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- 1. Demonstrate a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education
- 2. Examine the role of play in children's mathematics, science and technology learning
- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds
- 4. Evaluation a number of mathematics, science and technology resources
- 5. Locate and synthesise a wide range of research literature

Assessment tasks

- Article
- Literature review
- Critical reflections

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- 1. Demonstrate a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education
- 2. Examine the role of play in children's mathematics, science and technology learning

- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds

- 4. Evaluation a number of mathematics, science and technology resources

- 5. Locate and synthesise a wide range of research literature

Assessment tasks

- Article

- Literature review

- Critical reflections

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- 1. Demonstrate a fundamental understanding to the major theoretical developments in early childhood mathematics, science and technology education

- 2. Examine the role of play in children's mathematics, science and technology learning

- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds

- 5. Locate and synthesise a wide range of research literature

Assessment tasks

- Article

- Literature review

- Critical reflections

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- 3. Demonstrate how children use play to represent their experiences, construct

knowledge about, and make sense of their worlds

- 4. Evaluation a number of mathematics, science and technology resources
- 5. Locate and synthesise a wide range of research literature

Assessment tasks

- Article
- Literature review

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcomes

- 3. Demonstrate how children use play to represent their experiences, construct knowledge about, and make sense of their worlds
- 5. Locate and synthesise a wide range of research literature

Assessment tasks

- Article
- Critical reflections