ECHX827

Learning Through Mathematics, Science and Technology in Early Childhood Settings

S2 OUA 2017

Department of Educational Studies

Contents

General Information

Unit convenor and teaching staff
Kelly Johnston
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Prerequisites
ECHX600 or ECEX600

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. All enrolment queries should be directed to Open Universities Australia (OUA): see www.open.edu.au

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.open.edu.au/student-admin-and-support/key-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 (Assessment Tasks 1, 2 and 3).
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 scientfic learning for chilednre 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 (Assessment Tasks 1, 2 and 3).
- 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 review and disucssion of technologucal resources to support mathemtical and scientic 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 (Assessment Tasks 1, 2 and 3).
- 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 professional discussion.

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 (Assessment Tasks 1, 2 and 3).
- 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 discussions

Policies and Procedures

Late Submission - applies unless otherwise stated elsewhere in the unit guide

Unless a Special Consideration request has been submitted and approved, (a) a penalty for lateness will apply – two (2) marks out of 100 will be deducted per day for assignments submitted after the due date – and (b) no assignment will be accepted more than seven (7) days (incl. weekends) after the original submission deadline. No late submissions will be accepted for timed assessments – e.g. quizzes, online tests.

Extension Request

Special Consideration Policy and Procedure (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration)

The University recognises that students may experience events or conditions that adversely affect their academic performance. If you experience serious and unavoidable difficulties at exam time or when assessment tasks are due, you can consider applying for Special Consideration.

You need to show that the circumstances:

1. were serious, unexpected and unavoidable
2. were beyond your control
3. caused substantial disruption to your academic work
4. substantially interfered with your otherwise satisfactory fulfilment of the unit requirements
5. lasted at least three consecutive days or a total of 5 days within the teaching period and prevented completion of an assessment task scheduled for a specific date.

If you feel that your studies have been impacted submit an application as follows:

1. Visit Ask MQ and use your OneID to log in
2. Fill in your relevant details
3. Attach supporting documents by clicking 'Add a reply', click 'Browse' and navigating to the files you want to attach, then click 'Submit Form' to send your notification and supporting documents
4. Please keep copies of your original documents, as they may be requested in the future as part of the assessment process

Outcome

Once your submission is assessed, an appropriate outcome will be organised.

OUA Specific Policies and Procedures

Withdrawal from a unit after the census date

You can withdraw from your subjects prior to the census date (last day to withdraw). If you successfully withdraw before the census date, you won't need to apply for Special Circumstances. If you find yourself unable to withdraw from your subjects before the census date - you might be able to apply for Special Circumstances. If you're eligible, we can refund your fees and overturn your fail grade.

If you're studying Single Subjects using FEE-HELP or paying up front, you can apply online.

If you're studying a degree using HECS-HELP, you'll need to apply directly to Macquarie University.

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 (Assessment Tasks 1, 2 and 3).
- 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 (Assessment Tasks 1, 2 and 3).
- 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 (Assessment Tasks 1, 2 and 3).
- 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 (Assessment Tasks 1, 2 and 3).
- 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